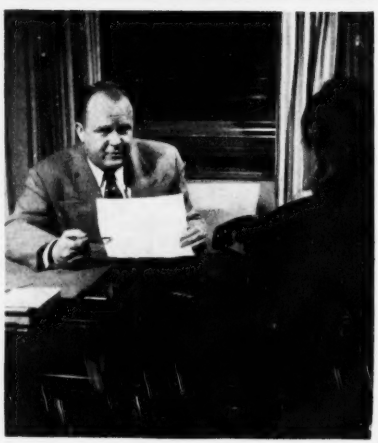
Chemical Industries Week

March 17, 1951

Price 35 cents



Organic chlorination boom thrusts by-product HCl into chemical "big time" ..... p. 7

CIW Camera visits sales service lab; sees researchers solve knotty problem ..... p. 14

New roller-type press speeds throughput; increases product uniformity ..... p. 19

Drug makers push catalog simplification; goal: to smooth distribution, boost sales ..... p. 27

P. R. Shays: Chemical executives eye his incentive plan for salesmen ..... p. 35

A McGRAW-HILL PUBLICATION

HANNAH JONES IS ROUGH ON *Soda Ash*

Hannah probably doesn't know it, but the glasses she handles every day contain one of the most widely used of all industrial chemicals. The largest single consumer of soda ash is the glass industry, where it is an essential raw material in regular glass formulas.

But the demand for this basic chemical is great in other fields, too. The chemical industry itself uses an enormous tonnage of soda ash in the manufacture of other chemicals. Other industrial consumers include soap, cleansing powders, pulp and paper, textile, iron and steel, aluminum and non-ferrous metals.

With new and expanding uses supplemented by needs for defense, the problem of producing adequate supplies for all is acute. To help meet this increased demand Mathieson is expanding its basic alkali production. Inquiries are always welcomed from consumers who desire assistance in solving a future soda ash supply problem. Mathieson Chemical Corporation, Mathieson Building, Baltimore 3, Maryland.

Mathieson Basic Heavy Chemicals

Sulphuric Acid • *Processed Sulphur* • Soda Ash
Caustic Soda • *Bicarbonate of Soda* • *Ammonia*
Ammonium Sulphate • *Nitrate of Soda* • *Chlorine* • *Calcium Hypochlorite* • *Sodium Chlorite*

Mathieson
CHEMICALS

SERVING INDUSTRY, AGRICULTURE AND PUBLIC HEALTH

Chemical Industries Week

March 17, 1951
Volume 68 Number 9

OPINION	2
NEWSLETTER	5
WHAT'S NEW	7
RESEARCH	14
PRODUCTION	19
SPECIALTIES	27
BUSINESS & INDUSTRY	35
MARKETS	45
BOOKS	48
BOOKLETS	52

PUBLISHER ..... Wallace F. Traendly
EDITORIAL DIRECTOR ..... S. D. Kirkpatrick
EDITOR ..... W. Alec Jordan
EXECUTIVE EDITOR ..... Richard L. Demmerle
MANAGING EDITOR ..... Howard C. E. Johnson

ASSOCIATE EDITORS: John J. Craig, Herman W. Zabel. ASSISTANT EDITORS: Joseph Gordon, Ralph R. Schulz. REGIONAL EDITORS: Frank C. Byrnes, Chicago; J. V. Hightower, San Francisco; James A. Lee, Houston. ART EDITOR: Woodfin G. Mizell, Jr. EDITORIAL ASSISTANTS: Donald P. Burke, Theresa Hass, Leona Mahler. DOMESTIC AND FOREIGN NEWS SERVICE: McGraw-Hill News Bureaus in principal cities of the U.S. and throughout the world.

Consulting Editors:

Lawrence W. Bass	Ernest W. Reid
Benjamin T. Brooks	Norman A. Shepard
John V. N. Dorr	Roland P. Soule
Charles R. Downs	Robert L. Taylor

Chemical Industries Week (including Chemical Specialties) is published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office: 1309 Noble St., Philadelphia 23, Pa.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 18, N.Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions to Chemical Industries Week are solicited in the chemical and process industries only from management men responsible for corporate affairs, purchasing, sales, marketing, packaging, production, research or chemical functions. Position and company connection must be indicated on subscription order. Address all communications to J. E. Blackburn, Jr., Director of Circulation, 330 W. 42nd St., New York 18, N.Y. Allow ten days for change of address.

Single copies 35¢. Subscription rates — United States and Possessions $5.00 a year; $8.00 for two years; $10.00 for three years. Canada $6.00 a year; $10.00 for two years; $12.00 for three years. Pan American countries $7.00 a year; $11.00 for two years; $14.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter July 15, 1944, at the Post Office at Philadelphia 23, Pa., under the Act of March 3, 1879. Printed in U.S.A. Copyright 1951 by McGraw-Hill Publishing Co., Inc. — All Rights Reserved.

TO MANUFACTURERS OF ADHESIVES

...New Available Compounding Tools... Five New Copolymer Resin Emulsions

POLYCO 220-R — Deposits powdery, discontinuous films. Useful for hardening GRS latices and the following emulsions:

POLYCO 400-40-NS — Flexible, plastic film. Good mechanical and aging stability.

POLYCO 417-50-NS — More rubbery than 400-40-NS.

POLYCO 418 — Low cost extender for all Butadiene-Styrene Latices.

POLYCO 380 — Flexible, non tacky, clear, tough, waterwhite film. These emulsions provide tools for the adhesive manufacturer to vary the elasticity, tack, hardness, wet stick and heat seal properties in their products to achieve the specific results desired.

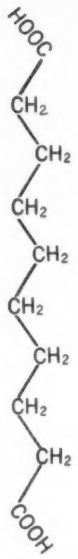
For complete data, or working samples, write American Polymer Corporation, Peabody, Massachusetts

POLYCO

★ AMERICAN ★
POLYMER CORPORATION

General Offices: **103 Foster Street, Peabody, Massachusetts**

SEBACIC ACID
FOR
"BUILT-IN FLEXIBILITY"



HARCHEM
PLASTICIZERS
*HARFLEX 500
DICAPRYL SEBACATE
DICAPRYL ADIPATE
DICAPRYL PHTHALATE
DIBUTYL SEBACATE
DI-ISO-OCTYL SEBACATE
DI-ISO-OCTYL ADIPATE
DI-ISO-OCTYL PHTHALATE
DIBENZYL SEBACATE
DIHEXYL SEBACATE
DIHEXYL ADIPATE
DIHEXYL PHTHALATE
DIMETHYL SEBACATE
**BUTYL BENZYL SEBACATE
CAPRYL BENZYL SEBACATE
*Trade Mark **Patent Pending
HARDESTY
CHEMICAL CO., INC.
41 East Forty-second St., New York 17, N.Y.

OPINION . . . . .

What About Tariffs?

Few issues have such ardent proponents and opponents as tariffs. Those who favor high tariffs shudder at any suggestion that they should be reduced. They argue that industry would be ruined, the progress of our country halted, the future of our nation imperiled, if we were stripped of tariff protection and left wide open to foreign competition. They cite the lower wage rates which obtain abroad, lower standards of living, and the profitless character of state-subsidized monopolies—aided and abetted by juggling currency devaluations—as according improper and unfair advantages to foreign producers.

The lower tariff advocates, characterized in our country by the State Department, play up the need to encourage the industrial development of all free nations, claim that it would foster greater and healthier international trade, be broadly beneficial to the entire world and the cause of peace.

Currently, of course, with tariff negotiations now being carried on at Torquay, England, the argument is waxing hot and heavy. Tomes of testimony have been registered in Washington—testimony from wool raisers, fishermen, dozens of industries. The prime pleas of most groups has been a stressing of the havoc lowered tariffs would cause—dislocation of U.S. industry and chronic unemployment.

A good many of these arguments could be interpreted by State, and by the public, to be selfish and shortsighted. Some, perhaps, are. But any industry which makes an appeal for tariff protection is open to criticism, subject to the suspicion that "protective tariff" is all that is sought—protection in the old sense of the word: "the artificial stimulation of a domestic industry."

The chemical industry has, fortunately, shunned the tearful approach. Its spokesmen have emphasized, quite properly, the vital necessity of maintaining a strong chemical industry in the interest of national defense.

That factor, in our opinion, cannot be overstressed. We do not need tariffs for "artificial stimulation" as we did, for instance, in 1916; we do need tariff protection from the unscrupulous practices of some foreign nations, particularly those that may well become our enemies.

The Torquay negotiators are considering tariff cuts—and they can be up to 50 per cent on some items—on about 30,000 chemicals. On which of these action will be taken is still secret, or supposedly so. (Possibly there are leaks; some suspiciously low quotations have been made on several imported intermediates during recent weeks. Conceivably some word of probable concessions has reached foreign traders.)

As it stands, the State Department will have no part of technical industry advisers at Torquay. The contention: they would constitute "pressure groups" and could not speak for the industry as a whole. The tacit implication, mayhap, is that chemical tariff matters are just as simple, and just are readily appraised, as duties on automobiles, sardines and butter.

Nothing could be farther from the truth. It is, obviously, impossible to set chemicals up into two neat piles—one tagged essential for national defense, the other non-essential. Our whole industry is an integrated, interdependent operation. Cutting the tariff on one particular chemical to the extent that its domestic production would be curbed or rendered economically unsound can have serious repercussions and endanger our national security.

Poundage consumption of any chemical is no criterion of its importance. We wouldn't think, for instance, of protecting our tank-building industry to the hilt while we cut tariffs on carburetors so that we would end up relying on Czechosloviakia for these "minor importance" components. Yet we may indulge in identical folly with respect to chemicals.

This fact must be considered carefully in connection with each chemical on which tariff concessions are contemplated. Unfortunately, too, such appraisals cannot be made by diplomats. It is a task which requires the attention of the best chemical brains in the country—and even they would have to be endowed with more foresight than most humans can muster.

One precautionary step in the right direction has been taken recently by the house of Representatives in amending H. R. 1612 and the incorporation therein of a peril-point provision. It is to be hoped that the new provisions will be adopted by the Senate.

Additional protection would be afforded, however, if an escape clause amendment were also adopted. A

clause should be included which would assure that the Tariff Commission would have to investigate any application for relief under the escape clause. Furthermore, it should be required that the Tariff Commission hold any such hearings only after reasonable public notice and the clear findings of fact be made available to support any denial of relief.

Senate adoption of these amendments is, we feel, of vital importance. Fortunately, both the Synthetic Organic Chemical Manufacturers Association and the Manufacturing Chemists' Association, Inc., are urging their favorable consideration.

If the decisions at Torquay are made unwisely, if they contain poorly-conceived concessions, serious harm can be done to our industry, to the furtherance of technological progress in our country, and, in fact, to our national defense.

The peril-point and escape clauses must be an integral part of the law. And they must be practical, workable.

Then, and only then, will the true objectives of all of us be realizable—the stimulation of world-wide trade and the preservation of the U.S. as a strong, free nation.

—**W. Alec Jordan**, *Editor*.

LETTERS . . . . . .

Systemic Insecticides

To The Editor: I have just read the article on Systemic Insecticides, (p. 21, Feb. 24th). . . .

. . . This is very timely material and is certainly of interest to the agricultural chemical industry. Certainly the article was direct and well organized and seemed to have a background of sound information.

Since we are especially interested in this phase of news, we hope that you will be able to continue such articles in your magazine.

Val E. Weyl
National Agricultural Chemicals Association
Washington, D. C.

Popping Specialties

TO THE EDITOR: WHAT'S HAPPENING TO CIW'S EDITORS STOP ARE THEY ON DIET RICE KRISPIES WHICH CRACKLE AND POP STOP QUOTE LAST ISSUE YOUR STORY NEW SILICONE POLISHES HAS THEM POPPING UP ON STORE SHELVES UNDER VARIETY OF LABELS STOP QUOTE ALSO DIAL SHAMPOO TEST MARKETING CAMPAIGN HAS FIRST PLASTIC BOTTLES THIS NEW ITEM POPPING UP IN NEW ORLEANS STOP.

BOTH STORIES INCIDENTALLY EXCELLENT REPORTING.

J. R. COHANE,
BUFFALO, NEW YORK

Bullseye for Reader Cohane. Popped, roundly overworked, is being led out to pasture.—Ed.

Kudos

To The Editor: The writer desires to compliment you on your new publication.

He feels that it definitely will fill a need . . . will meet with good reception.

C. J. Black
Purchasing Agent
Indiana University
Bloomington, Indiana

Reappraisal

To The Editor: As a regular subscriber to Chemical Industries we are prompted to write you, since we now have had an opportunity to reappraise the value of Chemical Industries as a weekly magazine.

Frankly, there was a time when the monthly issue represented a formidable amount of reading matter, and this in itself presented a slight mental hazard if your reading time was limited. The weekly issue seems to continue all the departments which we have found so valuable to us and so interesting, and the size is much more to our liking.

It stands to reason that you are now able to give us the chemical news faster and with the situation changing almost daily due to the growing defense program and other problems which are arising, this is of the utmost importance to all of us. All in all, we would say that this is a great change for the better, and since so often we take these matters for granted, we are instead taking this opportunity to advise you how pleased we are.

Allen H. Garber
President
Garber Export Corporation
New York, N. Y.

CIW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.
Address all correspondence to: The Editor, Chemical Industries Week, 330 W. 42nd St., New York City.

Chemicals with APPEAL

Aromatic Chemicals play an increasingly important role, not only in the field of chemistry and industry but practically in all facets of everyday living. Chemicals impart aesthetic importance and sales appeal. They have become an important adjunct of advertising, promotion and merchandising. Chemicals are utilized to make products look good, smell good, taste good and, quite often, feel good to the touch. Chemicals too, express and reflect the tempo and reality of the day like our literature or our movies or television.

For more than 150 years, Dodge & Olcott has devoted its research laboratories and its talents in the development of chemicals to improve American products and to give them greater appeal.

DO

DODGE & OLCOTT, INC.
180 Varick Street • New York 14, N. Y.
ATLANTA · BOSTON · CHICAGO · CINCINNATI · DALLAS
LOS ANGELES · PHILADELPHIA · ST LOUIS · SAN FRANCISCO
ESSENTIAL OILS • AROMATIC CHEMICALS
PERFUME BASES • VANILLA • FLAVOR BASES

Jefferson

. . . hallmark of high quality chemicals from hydrocarbon sources

The quality of Jefferson chemicals is achieved as a result of close chemical control at every step of the manufacturing process.

Regardless of the pressure of production, regardless of the stress of new demands, you can be sure that such quality will be maintained for your protection.

A request on your company letterhead brings you full information on our available products.

JEFFERSON ETHYLENE OXIDE

A highly reactive chemical intermediate for use in synthetic fibers, textiles, synthetic rubber, detergents, plastics and fumigants. Such widespread use rests on the ability of ethylene oxide to enter into countless reactions. For example it will react with . . .

Organic acids to form glycol esters
Alcohols and phenols to form glycol ethers
Ammonia to form ethanolamines
Mercaptans to form thioglycols and ethers
HCN to form ethylene cyanohydrin

For details concerning prices, delivery and specifications, write to Department B.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.

ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Sterilization of dried foodstuffs may be accomplished by using undiluted ethylene oxide. Materials are preheated to about 220° to 240° F. under vacuum, then subjected to the action of ethylene oxide at about 150° F. About one pound ethylene oxide to 35 cubic feet of space is required. Original characteristics of materials are retained.

Corrosion inhibiting coatings on ferrous metal surfaces can be provided by pretreatment in an aqueous solution employing a dispersing agent made from the reaction of 29 to 90 mols of ethylene oxide with 1 mol of lauryl alcohol.

N-methyldiethanolamine has been prepared, without serious contamination by higher homologues, by reacting gaseous ethylene oxide at a temperature of about 80° C. with an aqueous solution of methylamine. Yields of 83% based upon ethylene oxide have been reported.

Surface active agents of the glycol thioether type can be prepared with less by-product formation and improved yields by a two-step condensation of mercaptans containing from 6 to 24 carbon atoms with ethylene oxide. Initial condensation is carried out below 75° C. and further condensation in the range of 85° to 150° C.

Products made by this method are said to have greater uniformity of chemical constitution and physical state.

These developments are abstracted from recent publications or U. S. patents. The uses may suggest other applications of Jefferson Ethylene Oxide in your products or processes.

Chemical Industries Week

BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

British Columbia's provincial legislature is studying a proposed agreement between the province and Aluminum Co. of Canada under which Alcan would built its long-considered $500 million aluminum project. Outlook is that the agreement will be ratified without major change.

Plans call for a reduction plant of 300,000 tons annual capacity near Kitimat, about 400 miles north of Victoria on the Pacific Coast. A large dam and a power transmission system are part of the project. If approved, construction must start before June 1, 1953.

Talk is rife in Washington about the possibility of an aluminum plant in Maine. Hydroelectric power from the Penobscot River basin (rather than the now-discounted Passamaquoddy tide project) is a strong possibility. Tying in with primary aluminum from Maine is the suggestion made to Kaiser officials by Gov. Adams (N. H.) that an aluminum fabricating mill be located at Portsmouth.

Here's a substitute for glycerine, but there's a catch: A well-known company has developed a substitute that has almost the same physical properties and is superior with respect to oxidation and solvent power—besides which it's cheaper. Catch is that raw materials are available only on DO's, so it won't move out of the pilot-plant stage unless military needs arise.

Twenty-four square miles of castor beans will be grown in Texas under the sponsorship of the U. S. Department of Agriculture. USDA officials are now seeking a plant site in the Brownwood area for a hulling plant. The oil is vitally needed for aircraft lubrication and hydraulic systems. USDA has approved a procurement contract that would assure growers a 10¢-per-pound price (current market price: 12¢).

Goodyear Tire & Rubber Co. will be a major factor in vinyl resins when the expansion program of Pathfinder Chemical Corp., Niagara Falls, is completed. A Goodyear subsidiary, the firm is quadrupling its vinyl output. Completion of the new facilities is a matter of weeks.

Sulfur shortage is such that Freeport Sulphur Co. will get it the hard way down in Louisiana. A sulfur dome near Houma is under marsh water, so equipment will be transported to the site by barge. Since stockpiling is impossible, molten sulfur will be barged to Port Arthur for storage. After the dome is depleted, equipment will move on to other marshy domes that the company is exploring.

Ten tons of sulfur a day will be recovered by Lion Oil Co. from the 12-million cubic feet per day of "sour" natural gas it purchases for its refinery at Magnolia, Ark. Lion now removes the hydrogen sulfide and burns it, will install equipment to convert it instead to elemental sulfur.

Sulfuric acid makers and NPA officials are getting together in Washington this week to talk allocation. Sulfuric is the first commodity expected to be allocated under NPA's all-inclusive Order M-300. Later this month sulfuric makers and users will meet to discuss their problems. Separate orders will probably be written for each.

Merger in the instrument field took place this week as Tracerlab, Inc. (Boston) and Kelley-Koett Manufacturing Co. (Covington, Ky.) consolidated. Tracerlab makes nuclear instruments and radioisotopes; Kelley-Koett makes X-ray equipment and instruments to detect and measure radiation. Both firms will continue to operate under present management.

You can expect intensified activity in zirconium as a result of the Atomic Energy Commission's decision to release data on production of high-purity metal. It is now being made in Government-owned or controlled plants. Private producers will get technical aid from the AEC's Division of Engineering.

Test drillings for salt are now in progress at Strongsville, near Cleveland, Ohio. International Salt Co. has taken a lease on a tract of land which geologists say is underlaid with large deposits. If predictions of amount are correct, International will mine 750,000 tons a year. No secret is the firm's hope to sell its production to the chemical industry in the Ashtabula area. It is currently shipping large quantities from its Detroit domes to National Distillers Chemical Corp.

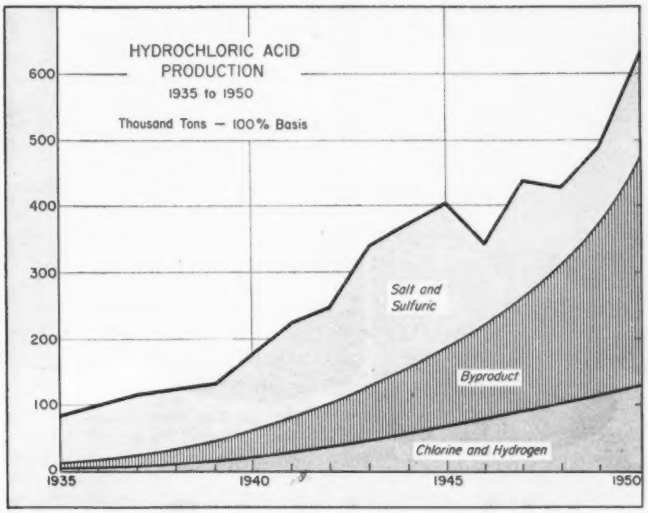
Chrome ore from Southern Rhodesia will provide raw material for Vanadium Corp. of America's expanded ferrochrome facilities at Niagara Falls. The company is spending $1.5 million on modernization and addition, and now it has acquired ore properties in South Africa through its subsidiary, Rhodesian Vanadium Corp. It has also arranged for use of a low-carbon ferrochrome process controlled by Societe d'Electro-Chimie, France. Production by this process will start this year.

Over-the-counter ion-exchange aid for ulcers is cleared by the Food and Drug Administration. Resinat, National Drug Co.'s antacid made from one of Rohm & Haas's weak-base anion exchangers, can now be sold without prescription. If cold aids are a guide, sales should soar.

Beating the metal shortage: Ohio's Highway Department officials are looking at bonded fiber glass as a substitute for hard-to-get steel in vehicle license plates. Twenty-five test sets have been ordered, will be tried out on state-owned cars and trucks over the next few months.

Davison Chemical Corp. is spending $175,000 to expand its output of granulated fertilizers at Perry, Iowa. The amount includes service buildings as well. Plant capacity will be upped 25%, and by next year major proportion of output will be granulated rather than pulverized.

. . . The Editors



HYDROCHLORIC OUTPUT: By-product acid caught up in 1947.

HCl Demand Now at Peak

Despite a substantial price rise, demand for hydrochloric acid hits a new high, presses production capacity.

Shortage of sulfuric acid and better methods of handling the corrosive chemical are two factors behind the surge.

By-product acid from production of chlorinated organics now accounts for bulk of output; salt-plus-sulfuric and chlorine-plus-hydrogen are decreasingly important production routes.

"Pinch me, I'm dreaming," might well be the unspoken thought of many hydrochloric acid* makers as they diligently try to catch up with demand. Despite record output of this important chemical, the order backlog keeps piling up. Not too long ago, it was the acid that was piling up instead.

Considerably increased amounts of by-product HCl from organic chlorination threatened to glut the market until the end of 1949. But during 1950, even prior to Korea, demand started to catch up with supply. By the end of the year, the present supply situation, verging on a critical shortage, had emerged.

The rapid transition from a buyer's to a seller's market occurred even though production had increased from 493 thousand tons in 1949 to 627 thousand tons last year, a boost of nearly 30%. Largest increase in use was due to greatly expanded acidization of oil wells; a sizable increase came about from replacement by HCl of critically short sulfuric acid in metal treating.

But overshadowing these has been the general expansion in practically every category, keeping pace with the general upsurge in the chemical industry. The current heavy demand situation is far from temporary, for the burgeoning industrial economy gives every indication of being able to absorb present output—and probably more.

By-product front runner: Dominant factor in HCl production a decade ago, the salt-sulfuric acid method still plays an important role in the industry. Characterized by a fairly heavy furnace investment, economics of the process depends on sulfuric acid price and value of the salt cake (sodium acid sulfate) also formed. In the last eight months, unprecendented demand for sulfuric for other purposes has diminished the relative contribution of this process in making HCl.

Biggest source of HCl today, and for many years to come, is the by-product acid resulting from organic chlorination, particularly of such hydrocarbons as natural gas, olefins, and benzene. Phenomenal growth of this field in the last five years, especially, has propelled HCl from this source far into the production lead. In 1947, by-product acid for the first time equalled production from salt and sulfuric, each accounting for 40% of this total. In 1950, more than 55% was by-product, and little doubt exists that the relative growth trends will continue as demand for chlorinated hydrocarbons mounts. More chlorine production for this purpose is slated for operation during 1951.

A third process of some importance for hydrochloric is manufacture from chlorine and hydrogen. This method has maintained its relative position during the last three years, accounting for around 20% of the total. Though not ordinarily competitive with by-product acid, the chlorine-hydrogen process makes a pure, anhydrous product that is more convenient and economical for some operations. Tetraethyl lead takes a large share of this output.

Use barriers broken down: To a considerable extent, the growth of HCl utilization has been made pos-

* To the trade, muriatic; to the chemist, HCl.

Drums—"Hard to Beat"

The same Continental fibre drums that serve industry so well are giving an equally good accounting of themselves in military service.

Continental drums give extra protection to dangerous, expensive or hard-to-handle articles for shipment anywhere. Their light tare weight cuts shipping costs. They load compactly and ride safely. The closures are tight and strong, but easy to open and close.

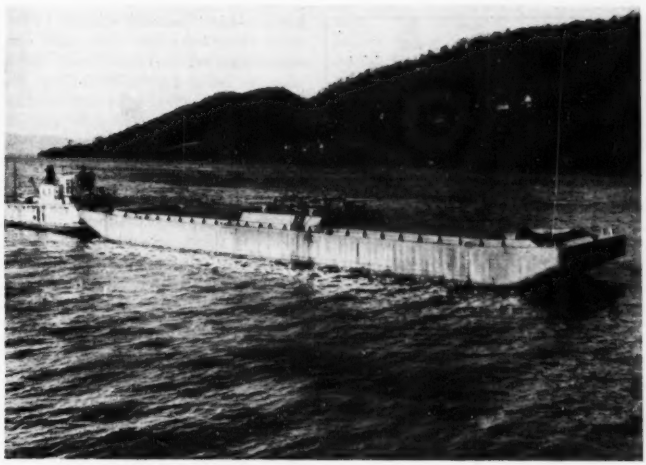
In addition to being rugged and durable, these drums can't be beat for appearance. They are neat and trim and feature quality printing or spray painting.

1. The famous Continental LEVERPAK drum with its unique lever-locking device gives maximum protection under hard usage. 12- to 75-gallon sizes.
2. Continental FIBERPAK drum...a rigid, all-fibre container in ¾- to 67-gallon sizes.
3. Continental STAPAK drum. Has fibre body with metal top and bottom. Supplied in 2- to 35-gallon sizes.
4. Continental UPAK drum. Custom-made for the shipment of rolled materials.

CONTINENTAL CAN COMPANY

FIBRE DRUM DIVISION — VAN WERT, OHIO

NEW YORK • PHILADELPHIA • PITTSBURGH • TONAWANDA • CLEVELAND
CHICAGO • SAN FRANCISCO • ST. LOUIS • LOS ANGELES • EAU CLAIRE



HYDROCHLORIC BARGE: Better transportation widens market area.

sible in spite of a number of undesirable properties. As the attendant problems are solved, new and expanded uses will follow. In the case of by-product acid, much of the original recovery capacity was installed only to obviate the serious pollution problems that would otherwise result. Recovery facilities are relatively expensive because of the acid's extreme corrosiveness, necessitating use of such materials of construction as tantalum, Hastelloy, and Karbate. Superior corrosion resistance is also needed in storage facilities and piping, another cost-upping factor.

Transportation costs have always been a deterrent to expanding consumption of HCl since a large part of production is a considerable distance from the market. Within the last two years, shipment in rubber-lined barges and marine tankers has greatly expanded the potential market.

One additional factor which has tended to limit more widespread use of HCl in metal treating is attack of the metal. However, this limitation has also been partially solved by developing better inhibitors and operating procedures. With the successful breakdown of these barriers, further expansion in hydrochloric will follow.

Resale price high: Since World War I,, the price of HCl, usually in ample supply, remained stable until March, 1950. Last year, increased costs and demand forced prices to climb to an $11-a-ton-higher average with a difference of $16 a ton between high and low quotations.

Ceiling prices on carloads, effective since January 25, 1951, are as follows:

Grade	*Carload price (works) per ton*
18 Baume	$29-31
20 "	31-33
22 "	36-38

Prevailing price for anhydrous HCl, used in quantity but usually within a limited distance from the producing plant, is in the $65 a ton range.

Since Korea, considerable activity has been noted in the resale market, with less-than-carload spot prices on 20 Baume acid around the $110 a ton level.

End-Use Pattern: Rapid expansion in HCl demand during the last few years has brought marked changes in the end-use distribution. CIW estimates the following pattern at the beginning of 1951.

Use	*% of Total*
Petroleum	29
Oil well acidizing	
Isomerization	
Catalysis	
Organic chemical intermediates	18
Synthetic rubber	
Vinyl chloride	
Chlorobenzene	
Other organic halides	
Heavy inorganic chemicals	16
Zinc chloride	
Other chlorides	
Metal treating	15
Glucose	9
Miscellaneous and resale	13
Total	100

More in prospect: While HCl is already a major heavy chemical, a strong probability points to continued substantial growth in the future. With the apparently insatiable demand for chlorinated hydrocarbons and improved recovery facilities, by-product HCl will widen the existing gap relative to the salt-sulfuric acid and the chlorine-hydrogen methods.

Lower distribution costs through barge and tanker transport will significantly extend potential markets in the East and Midwest. Concurrently, there will be an increasing tendency for large-scale producers of by-product acid to utilize it in their own or next-door operations. In the next few years, two important technological developments will increase this trend: increased acetylene manufacture, and improved methods of chlorination with HCl and air. The first will promote vinyl chloride expansion; the second will expand production of chlorobenzene and phenol.

As supply and demand approach a closer balance, and with greater availability in production and distribution, prices will tend to level out fairly close to current ceiling values. Taking the long-range view, it also seems likely that as sulfuric acid becomes less abundant or more expensive, HCl will be in a favorable position to share some of its heavy industrial obligations.

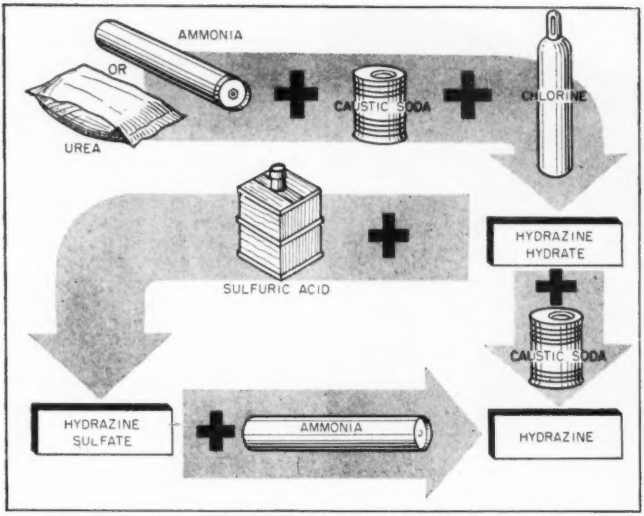
Nuclear Session

Oak Ridge National Laboratory and Oak Ridge Institute of Nuclear Studies will sponsor their annual Summer Symposium, August 27 to September 6. Representatives from industry will join Atomic Energy Commission personnel and representatives of educational institutions to discuss nuclear engineering.

The general subject was chosen at the request of the American Society for Engineering Education; and topics will include basic nuclear engineering, general nuclear power "philosophy," applications of the engineering sciences to nuclear technology, and the problems of nuclear engineering education.

Industrial firms are invited to get in touch with Dr. Russell S. Poor, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn., for information regarding participation in the symposium.

Considerable interest on the part of industry is expected to be manifested. More and more firms are using radioisotopes in research and production; and various industrial groups have urged private operation of nuclear facilities with the end of developing low-cost power.



HYDRAZINE PROCESS ROUTES: Two others should be borne in mind.

Green Light for Hydrazine

Practical processes have been developed for synthesis of hydrazine by reacting either urea or ammonia with sodium hypochlorite.

A price tag of seventy cents per pound is foreseen for large-scale production.

Three uses alone have an indicated hydrazine requirement of several tons per day.

Tonnage hydrazine for industrial use moved one step nearer by U.S. Rubber Co.'s development for sulfonyl hydrazide blowing agents for production of foamed rubber and plastics (*CIW, March 10, 1951*)—the latest hydrazine use to achieve the stature of commercial promise.

As yet, employed only on commercial-scale tests, the blowing agent, p,p′-oxy-bis- (benzene sulfonyl hydrazide), is synthesized from the corresponding sulfonyl halide and hydrazine. It holds particular interest because of the lack of odor and toxicity, and the light-hued foamed products that can be formed.

To all except the best-informed in hydrazine circles, hydrazine conjures visions of the German-developed, hydrazine-powered Walther engine, which enabled submarines to travel, completely submerged and without a schnorkel, for days on end.

But the properties of hyrdazine are such that its potential industrial uses are legion. And as a result of research work, not only during the earlier German development but also in recent years here, practical processes using two different raw materials, ammonia or urea, are ready to go into commercial production.

Uses: With a 70¢/lb. price, three specific uses are expected to require as much as five tons per day.

Early tests indicate that hydrazine bromide is an improved and less expensive soldering flux than zinc chloride. A potential market of about 1½ tons per day is indicated.

Addition of a dibasic acid hydrazide and formaldehyde to glue greatly increases the adhesive properties. By this means bone glue can be upgraded to the equivalent of hide glue. It is estimated that this potential market is also equal to about 1½ tons per day.

Maleic hydrazide, another development of U.S. Rubber Co., has shown considerable promise as a grass killer. Properly applied, it has little effect on broad-leafed plants. One large-scale outlet may be to kill Johnson grass, which is anathema to mechanical cotton-picking equipment. Another use for which it is being tested is to prevent sprouting of stored root crops such as potatoes. This outlet may eventually consume as much as two tons per day of hydrazine.

In addition to these very real possibilities, there are a vast number of patents on the use of hydrazine derivatives as insecticides, bactericides, pharmaceuticals, and diazo compounds of all types.

Industry's consensus is that there will be little commercial use for anhydrous hydrazine; it will be of interest only to the military as a high energy fuel.

However, there are many possible applications for hydrazine hydrate and other hydrazine derivatives even at $1 to $2 per pound (anhydrous basis). Two years ago hydrazine cost $9 per

ONE HYDRAZINE PROCESS IS USED CURRENTLY . . .

Intermolecular oxidation of ammonia or urea (see flowsheet).

. . . BUT TWO OTHERS ARE WORTH WATCHING FOR FUTURE DEVELOPMENT . . .

1. **Direct synthesis from the elements, nitrogen and hydrogen.**
2. **Intermolecular dehydrogenation of ammonia.**

. . . WHILE SEVEN OTHERS, WHICH NOW APPEAR TO BE TOO COSTLY, ARE "DARK HORSES" . . .

1. **Photochemical decomposition of ammonia.**
2. **Reduction of dinitrosopentamethylenetetramine.**
3. **Reduction of nitroso ketones.**
4. **Formation from aminomethanedisulfonic acid.**
5. **Reduction of potassium dinitroso sulfite.**
6. **Reduction of hydrazoic acid.**
7. **Electrolytic reduction of amides.**

pound; today this has been cut in half by the two producers, Fairmount Chemical Co. and Mathieson Chemical Corp. Tonnage production is expected to bring this price tag down to 70¢ per pound.

Processes: Processes from ammonia and urea have been proved to the point where only a nominal amount of refinement is required for design and construction of large-scale plants to make anhydrous hydrazine at a reasonable cost.

Both involve the reaction of sodium hypochlorite, usually formed in place by reacting caustic soda and chlorine, with ammonia or urea. The product in either case is hydrazine hydrate, which is dehydrated by either of two methods.

In the preferred method, further caustic soda is the dehydrating agent; in the other, the hydrate reacts with sulfuric acid to form hydrazine sulfate. The sulfate is converted to anhydrous hydrazine by reaction with ammonia.

From a long-term point of view there are two additional processes which should be considered: direct synthesis from the elements and intermolecular dehydrogenation of ammonia. But these processes are still far in the future.

Processes which have been studied but which do not appear to warrant further investigation because of high cost:

1. Photochemical decomposition of ammonia
2. Reduction of dinitrosopentamethlenetetramine
3. Reduction of nitroso ketones
4. Formation from amino methane disulfonic acid
5. Reduction of potassium dinitroso sulfite
6. Reduction of hydrazoic acid
7. Electrolytic reduction of amides.

Raschig: Mathieson Chemical Corp's pilot plant at Niagara Falls, N. Y., utilizes ammonia and sulfuric acid to remove water from hydrazine hydrate. The hydrate is produced by the Raschig process—from anhydrous ammonia and sodium hypochlorite.

The latter is produced by adding liquid chlorine to aqueous caustic soda to form a 12% sodium hypochlorite solution. Hydrazine hydrate results from the reaction of this with anhydrous ammonia. Salt, a by-product of the reaction, is concentrated and crystallized for removal by filtration. Hydrazine is produced as a 1% solution by the reaction, concentrated to 3% for salt removal, and separated as the hydrate by fractional distillation. The molal yield is 57% of the theoretical.

In one process the hydrate is dehydrated by reaction with sulfuric acid. The resultant hydrazine sulfate is reacted with anhydrous ammonia to produce anhydrous hydrazine and commercially salable ammonium sulfate.

From urea: Fairmount Chemical Co., Newark, N. J., produces hydrazine from urea by reaction with sodium hypochlorite. The hypochlorite is prepared in the same manner as in the Raschig process. Sodium carbonate, salt, and excess caustic soda solution are the by-products of the urea process. The salt and sodium carbonate are crystallized in forced-circulation evaporative crystallizers. The caustic soda remains in the mother liquor and is concentrated to a 50% solution for recycling to the system.

The initial hydrazine hydrate is dehydrated with strong caustic solution; anhydrous hydrazine is separated by distillation. Dehydration with ammonia and sulfuric acid is interchangeable with caustic soda dehydration. The molal yield is believed to be the same for each process.

At the moment industry is deciding whether to go ahead with large-scale hydrazine production. Very likely, and probably aided by a certificate of necessity, hydrazine will be available in large quantities shortly.

Air-Wick Patent

Chlorophyll-formaldehyde composition is ruled patentable despite report classifying chlorophyll as an inert ingredient in air fresheners. U. S. Patent Office Board of Appeals holds test of utility need be no stricter than that applied to perfumes or deodorants.

In its decision, the Board stated that the high standards required in testing the efficacy of medicines for internal application are not necessary in obtaining an air freshener patent.

The applicant, Guy S. Paschal, was seeking a reissue of his patent no. 2,326,672 (which protects Air-Wick) for a composition including chlorophyll and formaldehyde as an air freshener, and for the process of freshening air by dispersing this composition or chlorophyll in the air. The examiner regarded the chlorophyll as an inert ingredient in the composition on the basis of a joint report issued in 1944 by the Bureau of Standards and the National Institute of Health.

In disagreeing with the examiner's stand, the Board of Appeals said:

"We are of the opinion that applicant's various exhibits and affidavits establish that his compositions of chlorophyll and formaldehyde or of chlorophyll alone dispersed in air has a real, even though not clearly understood, beneficial effect upon the air or a pleasing effect upon the senses of those exposed to the air, and that this action, unless it can be shown to have definite harmful effects, has sufficient utility under the patent laws to entitle applicant to claims properly expressing the discovery. No harmful effect of the composition of the patent has been established."

Sea Harvest

Revived Japanese competition has discouraged domestic production of agar from seaweed, which was a war-baby industry. But the prevailing relatively high price (with the prospect, if the Korean war is prolonged, of even higher prices), the superior quality of East Coast seaweed, and rising consumption point to a revival of made-in-U.S.A. agar.

Every crisis in world affairs has resulted in the development of new industries in the United States, thereby making us less dependent on foreign sources. In the chemicals industry the most conspicuous of these developments was the building up of dyestuffs manufacture during and after World War I whereby we divorced ourselves from the long-time dominance of Germany in this field. A lesser known example of smaller importance is the development of the production of agar in this country during and after World War II, though this branch of the chemical industry has not even now attained the stature that its advocates think is possible.

Prior to World War II Japan had a world monopoly of agar production by virtue of an abundant supply of agar-bearing seaweeds along Japanese coasts. At that time the United States was using about 600,000 lbs. a year, of which 90% came from Japan. When a critical shortage developed here, the Government restricted its use to bacteriological work, which under normal conditions had taken only about 15% of the available supply.

The domestic agar industry, which had been started in a small way in California in 1920, was revived; and Government agencies in 1942 began seeking new sources of agar-bearing seaweed along the Atlantic Coast. This work was placed in charge of Harold J. Humm, then of the Marine Laboratory of Duke University, Durham, N.C., and now head of the Marine Laboratory of Florida State University, Tallahassee, Fla. Humm

SEAWEED HARVESTER: An industry may revive.

and his associates, with the financial assistance of the War Production Board, developed information as to the commercial possibilities of agar production on the Atlantic Coast.

The search of the Atlantic Coast, conducted with the help of U.S. Coast Guard ships, resulted in the finding of abundant quantities of the proper type of seaweed along the shores of North Carolina, near Beaufort; on the West Coast of Florida, particularly in the neighborhood of Tampa Bay; and on Florida's East Coast in the Indian River between Daytona Beach and Stuart.

In 1943 the Van Sant Co. of Beaufort, N.C., an affiliate of the American Chloriphyll Co., Alexandria, Va., began to produce agar. In 1945 the name was changed to Beaufort Chemical Corp. Small-scale production was also started in Florida by Citrus Concentrates, Inc., at Dunedin, on the West Coast, and by Sperti, Inc., at Jensen, on the East Coast.

But the quantities of agar produced in Florida by the end of the war were of small importance. At present there is no Florida production, though the raw material is still available for the development of such an enterprise. The plant at Beaufort is no longer producing agar, for Japanese agar is too competitive; instead it is concentrating "stick water" from menhaden processing plants.

In California, the only plant making agar is the American Agar & Chemical Co., at San Diego, which apparently is able to market agar in competition with the Japanese product of equal quality. "The chief difficulty facing production on the West Coast," says Marston C. Sargent, assistant professor of oceanography at the University of California, "seems to be that the easily harvestable supply of gelidium* is very limited. The poorer beds can be harvested profitably only when the price of agar is artifically high." Morrhead & Co., Los Angeles, which made agar during World War II, was disbanded "because it is impossible costwise to produce agar domestically for general uses against Japanese agar." The Moorhead plant was sold to the West Coast Agar Co., Seal Beach, Calif., which has not recently operated.

Market prices of agar over the years have shown a wide variation. Prior to the depression period of the 1930s the per-pound price of No. 1 bales ranged for some time between a low of 97¢ and a high of $1.60, but in 1932 the price got down to 46¢ and did not rise again above $1 a pound until 1937, when the high was $1.20. From $1.50 at the outbreak of war in 1939, the price rose to a high of $4.75 during the period of great scarcity in 1942. During 1943-45 there was a ceiling of $3.50. It rose to $4.00 in 1946, and the current tag is $1.50.

During the shortage of Japanese agar in World War II other countries besides the United States entered the field of agar production notably Australia, New Zealand, South Africa and Russia. Mexico has been an important source of agar-bearing seaweed for California, but in recent years they have used most of the raw material for their own agar manufacture.

Despite the discouragements which have attended agar production in this country since the Japanese product came back into the market, Humm, however, believes that an industry could be developed in this country:

"An agar (or agaroid) industry in Florida would not have to compete with Japanese agar," he claims; "the product will be similar and have similar uses to the extractive from Irish moss.†

"For most of its uses, Japanese agar could not be substituted at any price. Irish moss is a much better suspending, stabilizing, moisture-controlling agent for chocolate milk, ice cream, tooth pastes, various cosmetics, water-base paints, emulsions, bakery products and confections. A product similar to Irish moss extractive can be made from some of the seaweeds of Florida that occur in abundance."

Many uses: Agar was originally used in this country as a bacteriological culture media and in foods. In the food field it is used by manufacturers of frozen desserts, confections, baked goods, cheeses, jams, jellies and marmalade; as a stabilizer in mayonnaise and salad dressings; in canned meats – especially fish, poultry and tongue – to prevent the product from becoming mushy by vibration in transit; as a clarifying agent for beers, wines and liquors.

In medicine its principal use, other than as a bacteriological agent, has been in the relief of constipation and for treatment of goiter and as a source of iodine. In dentistry it is the principal ingredient of a compound for making impressions for plates.

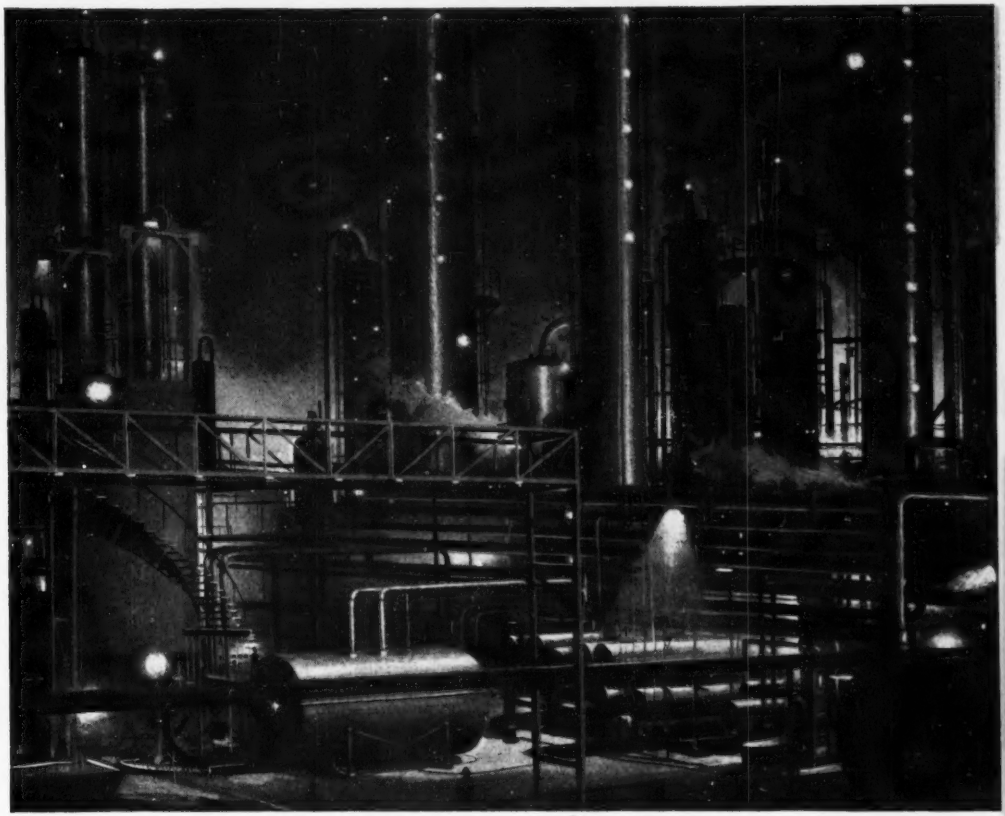
Its industrial uses too, are many and varied: base for greaseless creams, to stabilize emulsions and to control moisture content of tooth pastes, shaving creams, hand lotions, deodorants, sunburn creams and similar preparations; as a suspending agent for graphite in die-lubricating compounds used in the manufacture of tungsten wire for light bulbs; as emulsions for photographic films; it is used in hectograph duplicators, as an activator in nicotine sprays, in the electroplating of lead, in batteries for submarines, and to coat humus particles for the marketing of nitrogen-fixing bacteria; also as a source for potash for fertilizers, a source material in the manufacture of acetone and calcium acetate, as an adhesive in plywood, as a raw material in the manufacture of linoleum, artificial leathers and artificial silk, as an insulting material against sound and heat, and as sizing for paper and fabrics, and as an ingredient in water-base paints.

Easy process: Agar can be extracted easily from seaweed and no elabrate equipment is needed. In California large pressure tanks are used, while in North Carolina cooking was done in wooden tanks in which the water was heated by live steam. After six hours cooking, the agar solution is separated from the seaweed residue by straining. After gelation the agar may be chopped and then frozen, or it may be frozen in cans without chopping. Then the product is melted and dried, granulated by a hammermill process and packaged for market.

Within the limitations that Dr. Humm has pointed out, the field for agar production in the United States is still open to entrepreneurs who want to start a new business.

*The genus of seaweed used in California as a source of agar; full name: **Gelidium cartiligineum.** The difficulty of obtaining **Gelidium** is primarily due to cost rather than abundance. Most of it is available only to divers working in full suit during calm weather. Because of labor cost, the raw material cost is extremely high.

† The Krim Ko Corp. (subsidiary of the Kraft Foods Co.) manufactures a million pounds of extractive a year at New Bedford, Mass.; a new plant is going up at South Portland, Me.—ED.



Celanese®
CHEMICALS

Working Overtime for INDUSTRY U. S. A.

American industry, today, is exceeding the highest production levels in its history . . . consuming more chemicals and other basic raw materials than ever before.

The Celanese Chemcel plant, near Bishop, Texas, prime source of many vital organic chemicals, is working around the clock. In spite of this peak effort, the increasing demands of government and heavy industry have already ear-marked plant production for months ahead.

Celanese has abundant resources of natural petroleum gas to draw upon in the production of formaldehyde, acetone, methanol, and other organic chemicals by oxidation. Plant facilities are being expanded; the latest developments in manufacturing processes are employed in production.

Behind this expansion program is a generation of experience in petroleum chemistry—a prospect of still greater output in the future.

• • •

Celanese Corporation of America, Chemical Division, Dept. 502-C, 180 Madison Avenue, New York 16.

*Reg. U. S. Pat. Off.

ACIDS • ALCOHOLS • ALDEHYDES • GLYCOLS • KETONES • PLASTICIZERS • SOLVENTS

1 SHARPLES CHEMICALS, INC.'s new Sales Service Laboratory at Devon, Pa., is headed up by Dr. B. S. Garvey, Jr. It is devoted to technical service on rubber chemicals. Salesmen submit problems directly or through sales office.

RESEARCH . . . . . .

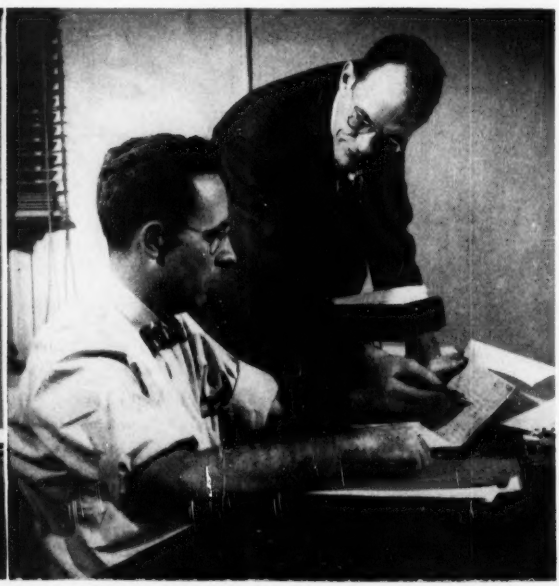
Service Lab Aids Salesmen

A sales service laboratory sits in the "no man's land" between pure science and pure commerce. Ben Garvey, director of Sharples Chemical's new lab, uses the former's techniques to serve the latter's ends; but conversely, the solution to a customer's problem—like that pictured here—often represents a definite research contribution.

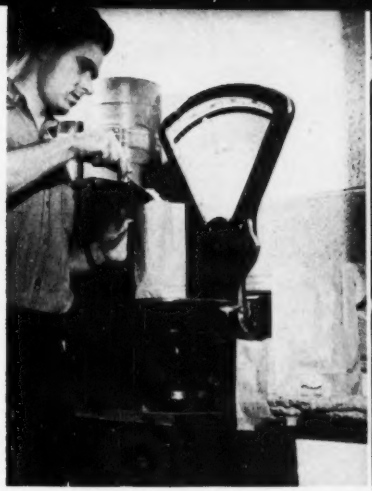
The problem here was bloom (whitish, powdery appearance) on the surface of nitrile-type rubber aircraft parts. Garvey made up samples according to the customer's formulation; tried four approaches to the problem, three of which worked. The best answer, incidentally, was also the cheapest.

Key to the problem was using a mixture of accelerators. Bloom is due to limited solubility of materials, including accelerator, in rubber. By using a mixture, one can incorporate sufficient accelerator without exceed-

2 GARVEY SITS DOWN with Salesmen Bryant C. Ross, one of whose customers has run into a bloom problem.



3 DAN YOCHUM COMES IN to discuss the problem and various ways of licking it. Yochum supervises actual lab work.



4 MORRIS KEYSER compounds samples according to customer's formula.

5 C. A. MORSCHAUSER adds measured amounts of ingredients to rubber in mill.

6 THE MILLED RUBBER then goes to a vulcanizing press.

. . . . . .

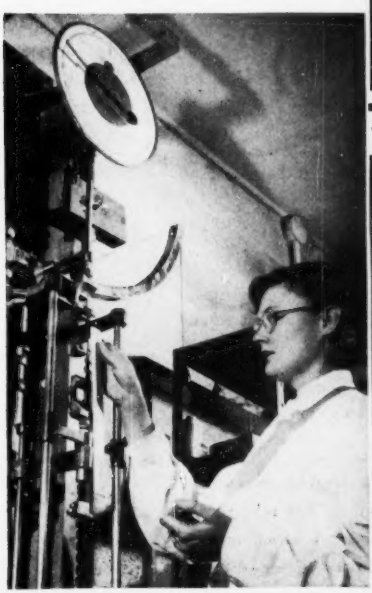
CIW Cameraman: Lynn Crawford)

ing the solubility limit of any single component.

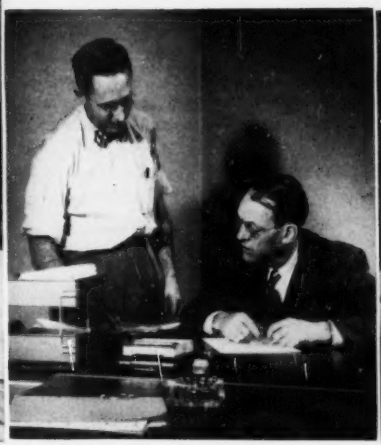
It's not unusual for research results to come of a sales service laboratory, but because such labs are usually thought of as minor appendages to sales departments, their research role is often overlooked.

7 SAMPLES — compounded with different accelerators—are removed from press.

8 TECHNICIAN Ruth Donnelly cuts strips for tensile testing.



9 BETTY CALLOWAY runs tensile tests—one of several tests applied.



10 TESTS COMPLETE, Yochum gives results to Garvey, who drafts report.

11 ROSS RECEIVES report, then transmits it to customer.

PURITY BRINGS *television* TO LIFE

What makes television work? Many things, of course.

But one of the vital elements in television's magic is a thin coating of phosphor on the face of the picture tube. Turn the switch, and this ultra-pure coating virtually comes to life, particle by particle.

Phosphors must be made from the purest of pure chemicals—their impurities reduced to fractional parts per million. With such requirements, it is natural that the television industry looks to Mallinckrodt as a prime source of extreme purity chemicals for phosphor production. Mallinckrodt also cooperates with the television industry in supplying unusual chemicals for continuing exploratory research.

For 84 years we have successfully supplied the needs of industry for chemicals of high purity, exceptional uniformity, and particular physical form. We shall continue to provide industrial users of fine and hard-to-make chemicals with the best that long experience, progressive research and modern facilities can produce. *Precise chemical processing is our business.*

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York

Mallinckrodt

ORGANIC INTERMEDIATES • INORGANIC CHEMICALS • CHEMICALS FOR ELECTRONIC USES • METALLIC SOAPS • ANALYTICAL REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1867 •

Easy Freeze

Trifluorobromombethane may cause refrigeration equipment manufacturers to revise their blueprints for deep-freeze units. Two-stage compression is now required to get down into the deep-freeze temperature range, but the novel halocarbon can do the same job in one easy step. Result is extra efficiency and smaller equipment.

A product of the Minnesota Mining and Manufacturing Co., trifluorobromomethane currently finds service with the army as a fire-extinguishing agent. Its use in refrigeration, however, is not a shocking new development. Fluoro-bromo halocarbons, as a class, possess the same virtues which led to widespread acceptance of fluoro-chloro halocarbon refrigerants. They are colorless, odorless, tasteless, non-toxic, non-inflammable, non-corrosive, and highly compressible.

Despite these assets, trifluorobromomethane is not likely to be an overnight freezer-favorite. New equipment needed to handle it will have to wait out the line of mobilization priorities.

•

2,3-Butylene glycol: Now in commercial production by Chemical Div., Celanese Corp. of America, this compound and closely related 1,3-butylene glycol have a market in the manfacture of modified alkyd resins, and polyester resins and plasticizers. The 1,3-gycol has been available for some time from Carbide and Carbon Chemicals, but 2,3-butylene glycol is a brand new commercial product with properties similar to ethylene and propylene glycol (i.e. hygroscopic, high-boiling, low vapor pressure). Adjacent hydroxyl groups suggest interesting applications as an intermediate.

•

Aluminum phosphates: Monsanto Chemical Co. is making pilot-plant quantities of aluminum phosphate bonding agents for refractories, refractory paints, and high temperature cements. Dubbed Alkophos, these bonding materials compete with sodium silicate, but offer the advantage of good green strength which makes possible the in-place firing of molded shapes to yield high-melting (1537 C), non-slagging refractories. Prices range from 6¢ to 17¢ a pound, depending upon grade.

•

Carboxymethylmercaptosuccinic acid: Exhibiting typical reactivity of polybasic acids, this Evans Chemetics product is further enhanced by a thioether linkage which contributes to the anti-oxidant and stabilizing properties of the acids and its derivatives. Alkyd resins formed by reaction with polyhydric alcohols are given good color stability by the thioether group. Trialkyl esters are excellent polyvinyl soaps of partial esters and amides chloride plasticizers; alkali and amine make a variety of surface-active agents; various salts and esters function as oil additives. A white powder of better than 98% purity, the acid is priced from $1.15 to $2.00 a pound (based on size of package).

•

Determining sterol structure: Detection of double bonds in complex new steroids, now a difficult degradation procedure, is simplified by infrared absorption studies. Value of the new technique will have to await the proof of adequate comparison data.

•

Tracer insecticide: British investigators at the University of Leeds have succeeded in incorporating phosphorus 32 in the bis-dimethylaminophosphorus anhydride molecule. The compound containing the radioactive label, will be used in systemic insecticide studies.

•

Alcohol detection: Ethanol suspected of containing methanol is treated with resorcinol and concentrated sulfuric acid. Pink color denotes presence of methanol.

Detection of isopropanol in ethanol —always a ticklish problem—is facilitated by a 1% solution of p-dimethylaminobenzaldehyde in concentrated sulfuric acid. Give-away is a brilliant red-violet ring which slowly decomposes. Similar red-brown color is given by n-propanol.

•

Virucides: A group of 4-hydroxyphenylsulfonamidothiazoles, synthesized by American Cyanamid researchers, exhibit virucidal activity. They appear to be effective against polio.

•

Dissolving the insoluble: Water-insoluble vitamins (i. e. A, D, and E) are solubilized in aqueous solution by using long chain ethers containing polyoxyethylene groups. Example: 4-oleyloxybutyl ether of polyoxyethylene glycoe 1,000.

•

Ion exchange symposium: Industrial applications of ion exchange will be the topic of the forthcoming A. I. Ch. E. meeting at the Mellon Institute, Pittsburgh, April 20.

Made to Order for a Particular Job

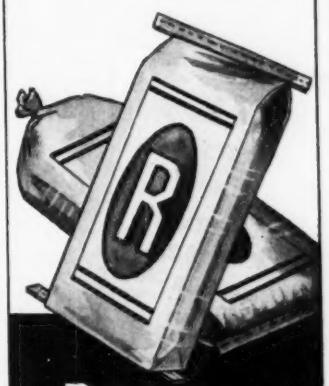
The humming bird, with its long bill, rapidly moving wings, and streamlined body, is Nature's way of creating a perfectly designed product.

Raymond Multi-Wall Paper Shipping Sacks

are typical examples of how a product can be designed and manufactured to meet special packing and shipping problems.

Perfectly designed and constructed, they meet all the shipping and packing requirements of crushed, powdered, and granulated materials. These Shipping Sacks are the No. 1 containers in the chemical industry. CUSTOM BUILT, made in various types and sizes, printed or plain, there is a Raymond Shipping Sack ideally suited to practically every problem of crushed, powdered, and granulated chemicals.

THE RAYMOND BAG COMPANY
MIDDLETOWN, OHIO



RAYMOND
MULTI-WALL
PAPER SHIPPING
SACKS

A high purity *coagulant* especially manufactured for compounders of latex products...

Photo Courtesy American Anode, Inc., Akron, Ohio

Baker CALCIUM NITRATE

6 Baker Chemicals for the Rubber Industry

- CALCIUM NITRATE
- MAGNESIUM OXIDE
- MAGNESIUM CARBONATE
- LEAD ACETATE
- LEAD PEROXIDE
- CARBON DISULFIDE

The dependable uniformity and high quality of Baker's Calcium Nitrate gives it an ever-widening appeal to the rubber industry.

Especially manufactured for use by latex compounders, Baker's Calcium Nitrate has the exceptionally high purity demanded in a coagulant. It has superior wetting qualities . . . does not harden in the barrels, and remains in workable condition . . . gives more uniform results, with less trouble in process work.

This product is a technical crystal ranging in size from 1½" to smaller sizes. It is a creamy white color. It contains 3 molecules of water of crystallization.

Baker's Calcium Nitrate helps reduce overall production costs—gives you efficient and economical results! Specify it for your processing.

Baker supplies several other chemicals to the rubber industry—chemicals known for their uniformity and dependability. Whatever your needs, your inquiries for samples and prices are invited. Write to J. T. Baker Chemical Co., *Executive Offices:* Phillipsburg, New Jersey.

Baker CHEMICAL

Baker Chemicals

REAGENT • FINE • INDUSTRIAL

Baker CHEMICAL

Big Squeeze

Floating ring between opposing rolls in new hydraulic press resists plugging, allows use of higher roll pressures.

First commercial unit used for dewatering bark, but has possibilities in the more efficient treatment of fibrous materials of all types.

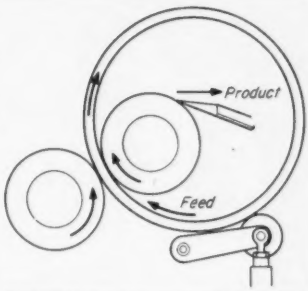
A new name in the chemical processing field is "Stacomizer." This machine, made by Stacom Industries, Inc., of New York and being researched by Armour Research Foundation, Chicago, is a brand new design of a basic machine. It offers new possibilities in extraction processes, fiber recovery, and preparation of fibrous materials for processing operations.

Consolidated Paper Co. is now installing its second Stacomizer at the Wayagemack Mill. Its first was used at the Cap de Madeleine Mill. Both units are for dewatering bark, Serrated roll surface are utilized to increase the throughput—950 tons per day with a 60-inch roll at the Wayagemack installation.

The Stacomizer might be classed as a continuous-feed, roller-type hydraulic press. But when you get down to details, that's where the resemblance to others in this class ends. In a standard rolling mill, two opposing rolls do the work. The Stacomizer uses three rolls. One, the back-up roll, is fixed and driven and contacts the outside of another. This is a large floating ring and surrounds the work roll, which is also driven but is free to move in a horizontal plane.

The floating ring is not driven. It rotates with the work roll by riding on a blanket of the material being processed and automatically adjusts to an equilibrium position which changes to compensate for varying feed conditions. Hydraulic pressures up to 500 tons apply a uniform squeeze, up to 15,000 lb.. per inch of roll width, to a progressively decreasing volume of material without heat buildup. This is a much higher pressure than can be used in a standard two-roll press.

This unique design has many advantages. The Stacomizer accepts accepts softer materials. It will not plug. Materials are processed uniformly due to the automatic equilibrium adjustment and higher fluid extraction is possible. Absence of grinding and shearing preserves fiber length and strength, and absence of frictional heat preserves heat-sensitive compounds.



One difficulty in employing the Stacomizer is the reduction in throughput when processing slippery materials. This problem has been partially solved by serrating the roll surfaces. But unless the serrations mesh, pockets of untreated material pass through without being processed.

An experimental model is in use by Anglo-Canadian Pulp and Paper Mills Ltd. for dewatering bark, so that it can be burned in the company's boilers. Bark disposal has always been a problem, and previous dewatering methods have been inefficient, costly, and generally unsatisfactory. Other potential uses in the paper industry include preparation of wood for cooking and sulfite-pulping, defibering, dehydration, and preparation for chemical extraction processes.

The dewatering blanket produced by the Stacomizer is unusually pervious, and defibering has progressed to such a point that surface area offers ideal conditions for solvent extraction processes. Fibers are readily separated from other components. Being of original length and strength, in many cases they can be used to provide an additional by-product.

Orange juice prepared by the Stacomizer reportedly is more stable. Natural vitamins and volatile or heat-sensitive components are retained with consequent increase in value of

Too Small To Do Your Own Research?

RATS and patch tests, plant design and vitamin testing, analyses and research, bacteriology and stainless steel spray dryers, chemical specialties and protective coatings, these and many, many more go to make up that EVERY FORM OF CHEMICAL SERVICE that we furnish. Each form is carefully tailored to the client's needs.

INDIVIDUALS

can often provide the answers working alone,

BUT

teams usually accomplish much more by combining the experience and abilities of several people.

What Is Your Problem?

FOSTER D. SNELL, Inc.
29 W. 15th St., New York 11, N.Y.
WA 4-8800
Chemists -:- Engineers
RESEARCH LABORATORIES

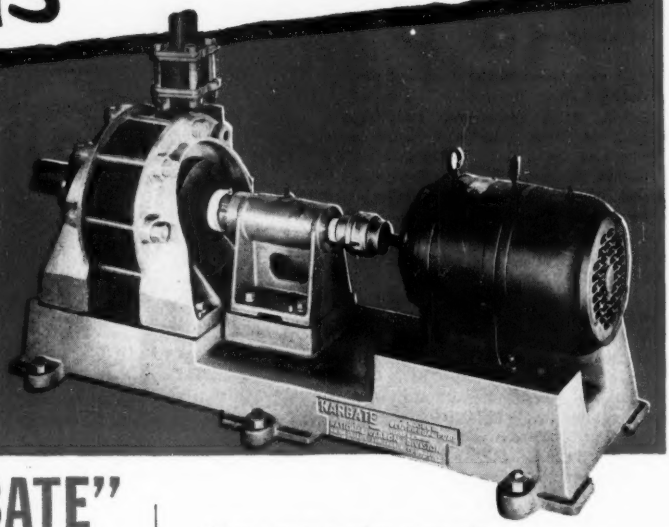
NOW SAVE 2 WAYS

not only by—REDUCED PRICES

but also thru—

LOWER MAINTENANCE COST

To the savings made by the reduction in "Karbate" brand impervious graphite pump prices (up to 33%), add the all-important factor of *very low annual maintenance cost.* Our records show some pumps in service for years, requiring practically no replacement parts.



Specify "KARBATE" BRAND

Impervious Graphite Corrosion Resistant

PUMPS

HERE'S WHY—

- Case and Impeller are of "Karbate" impervious graphite – they do not corrode.
- Stainless Steel Shaft, where exposed to corrosive fluids, protected by "Karbate" impervious graphite.
- "Karbate" impervious graphite rotary seals* are regular equipment – included in basic pump price. They are not "extras".
- No stuffing gland to require packing – a single, occasional adjustment of the "Karbate" rotary seal replaces this cost.

Other NATIONAL CARBON products

*Now, even at new low pump prices, "Karbate" rotary seals have been improved. Teflon is used to gasket the seal to the shaft and the gasket is adjusted, independently of pressure, on the seal faces.

OTHER FEATURES:

- All-purpose application
- Freedom from product contamination
- Excellent corrosion resistance
- Rugged construction
- Low maintenance – minimum servicing and replacement of parts

The term "Karbate" is a registered trade-mark of

NATIONAL CARBON DIVISION
UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street, New York 17, N. Y.
District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco
In Canada: National Carbon Limited, Toronto 4

HEAT EXCHANGERS • PUMPS • VALVES • PIPING • TOWERS • TOWER PACKING • BUBBLE CAPS • BRICK • STRUCTURAL CARBON • SULPHURIC ACID CUTTERS • HYDROCHLORIC ACID ABSORBERS

the end product. Other potential uses are evident in processes involving the extraction of oils, juices, or other fluid components from fruits, vegetables, nuts, seeds, berries, herbs, etc. Additional possibilities: the extraction, preparation, and manufacture of therapeutic products.

Production of starches, flours, and other granulated or powdered materials by means of the Stacomizer is being investigated.

Cellulosic materials can be prepared so that bleaching or solvent extraction will recover many valuable components. In addition, the defibering action will allow fiber recovery and utilization from various by-products.

The Stacomizer seems to offer a new and promising solution to decortication and dewatering processes.

Roll Temp

Determination of roll surface temperature is a difficult and, in the processing of heat sensitve materials, a most important job. Previous methods touched the surface of the roll and caused scoring, or required complicated electrical circuits.

Leeds & Northrup's new unit measures roll surface temperature without touching the roll. The measuring element is mounted only 1/32" from the surface of the roll, as the temperature of a film of air immediately adjacent to the roll is the same as that of the roll surface. In this position air is drawn from this film and over the measuring element, heating it to virtually the same temperature as that of the roll surface.

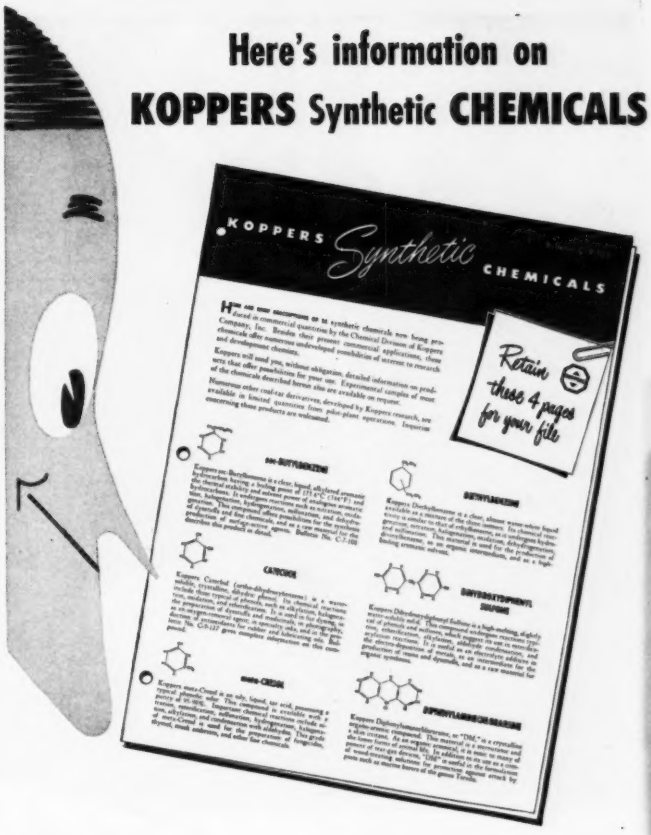
The difference in the air temperature and the actual temperature of the roll surface is small (4 F or less) but substantially constant, sufficiently accurate for process control.

A safety bumper retracts the measuring head if some material being processed should adhere to the roll surface. A further safety device also warns the operator when the measuring head is retracted.

Leak Detector

Emission of positive ions by hot platinum is greatly stimulated by traces of halogens or their compounds. Recognition and use of this unique property is the basis for a new low-cost leak detector recently developed by Distillation Products Industries, Division of Eastman Kodak Co.

Intended to appeal primarily to those with only an occasional need for a



Here's information on KOPPERS Synthetic CHEMICALS

● Bulletin C-9-103, shown here, lists the properties, reactions and uses of 21 synthetic organic chemicals produced by Koppers Chemical Division. Most of these chemicals have established commercial applications; also, they are of interest to research and development chemists. This Bulletin describes the products shown on the right.

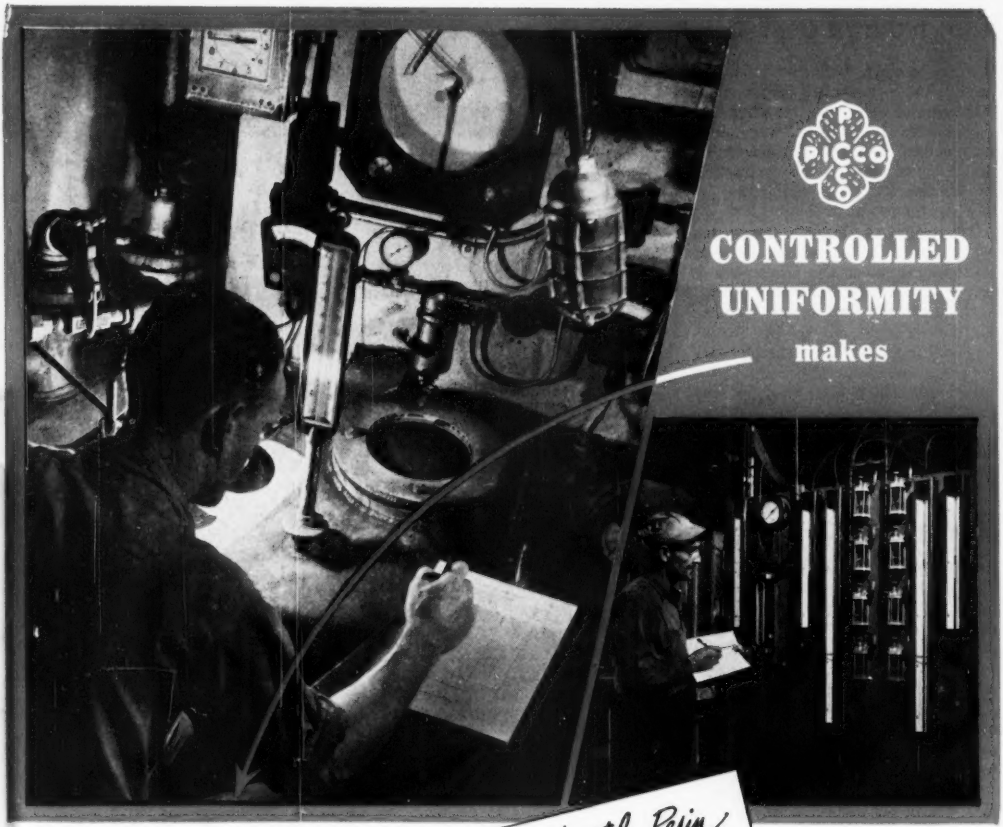
Write For Your Free Copy

Send your request for this Bulletin to Koppers Company, Inc., Chemical Division, Dept. CI-3-17, Koppers Building, Pittsburgh 19, Pa.

sec-Butylbenzene
Catechol
meta-Cresol
Diethylbenzene
Diphenylaminechlorarsine
Di-tert-butyl-meta-cresol
Di-tert-butyl-para-cresol
Divinylbenzene
Isopropyl Phenols
beta-Methyl Umbelliferone
Mono-tert-butyl-meta-cresol
Nonyl Phenol
Penacolite® Adhesives
Phthalic Anhydride
Propiophenone
beta-Resorcylic Acid
Resorcinol
Sodium Cyanide Solution
Sodium Sulfite
Styrene Monomer
Polystyrene

KOPPERS

KOPPERS COMPANY, INC.
Chemical Division, Dept. CI-3-17
Koppers Building, Pittsburgh 19, Pa.



CONTROLLED UNIFORMITY makes

The Versatile Resin

PICCOLYTE dependable

You are assured of dependable uniformity when you use PICCOLYTE, because of the rigid control of every step of manufacture. The photograph above shows the controls of the Polymerizer, the kettle in which resin is made from Pinene.

Manufacturing equipment is of the most modern design, and highly perfected instrumentation procedure permits operators to keep the material under constant observation during processing.

PICCOLYTE is a versatile resin, having properties that make it ideally suited for a wide variety of products.

Write for bulletin giving complete details.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
Clairton, Pennsylvania
...Plants at Clairton, Pa., West Elizabeth, Pa., and Chester, Pa.

Distributed by Pennsylvania Falk Chemical Co., Pittsburgh 30, Pa. and Harwick Standard Chemical Co., Akron 5, Ohio

detector, the new device has the sensing element enclosed in a glass tube which is sealed into the system under test. In operation a moderate vacuum is placed on the system and a jet of Freon vapor directed against suspected portions of the system. When a leak is located the meter deflects.

Presence of Freon in the evacuated system instantly increases the ability of the hot platinum anode in the sensing element to emit positive ions. And it is these ions that are measured by the detector.

•

Gyratory sifter: Allis-Chalmers Manufacturing Co.'s new gyratory sifter has a counterbalanced driving mechanism which makes all of the sifting area of the sieves equally effective. Designed for stacks of three, four or five sieves, the new unit for sifting dry free-flowing particles weighs approximately 400 pounds.

•

Chart recorder: An accuracy of 0.25% of scale is achieved in the new deflection strip-type recorder now being manufactured by Wheelco Instruments Co. Dubbed the Wheelco Capacilog, the new recorder provides up to six measurements on a single chart.

•

Rubber-lined valve: Emergency gas or liquid shut-off service is provided by R-S Products Corp.'s new rubber-lined butterfly valve. Compressed rubber is utilized around the periphery of the vane to give a positive shutoff. The rubber lining allows use of an iron body where stainless or other alloy steels would normally be required. Sizes range from 2" to 72" in diameter.

•

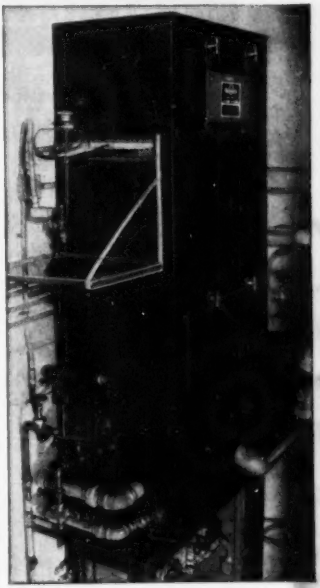
Conductivity bridge: Use of mixed bed ion exchangers to demineralize water has called for the development of conductivity bridges capable of measuring the very high specific resistances of the high purity water produced. This requirement is met in Industrial Instrument Co.'s Solu-Bridge which measures 1-18 megohm-centimeter specific resistance, referred to 25 C.

•

Slow speed motor: Both the motor and brake of a new fan-cooled motor manufactured by Sterling Electric Motors, Inc., are totally enclosed. An internal fan circulates cooling air inside the motor case while an outer fan delivers a stream of air to cool the outer case. Ratings from 2 to 15 horsepower are available with shaft speeds from 30 rpm to 280 rpm.

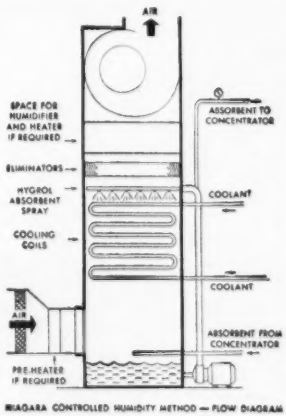
New "Controlled Humidity" Method Gives a Better Solution to Air Conditioning Problems

"Hygrol" Absorbent Liquid Dehumidifies Fresh Air Without Refrigeration



NIAGARA Air Conditioners or Dehumidifiers using "Hygrol" liquid absorbent give precise control of air temperature and humidity... at lower operating cost, with large savings in space and with smaller and less expensive equipment, in many applications.

This method dehumidifies the air by passing it through a chamber in which "Hygrol" spray removes its moisture and produces a low dew point. The "Hygrol" solution resulting is continuously and automatically re-concentrated, providing always full capacity in air conditioning and assuring always a constant dehumidifying capacity and a trustworthy, constant condition for your material, apparatus, process or room to be conditioned.



NIAGARA CONTROLLED HUMIDITY METHOD — FLOW DIAGRAM

"Hygrol" is a liquid, not a salt solution; it stays pure and non-corrosive; it does not cause maintenance or operating troubles in food plants or in chemical processes.

Investigate this new Niagara Method for "comfort" air conditioning as well as to protect quality in hygroscopic material, or processes or instruments, or to prevent condensation damage to metals, parts or products.

Write for Bulletin 112

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. CI, 405 Lexington Ave. **New York 17, N. Y.**

Experienced District Engineers in all Principal Cities

PROBLEM...

To help papermakers formulate high-solids pigment casein coatings to be applied by high-speed roll coaters, without causing surface patterning, unevenness, and other imperfections.

SOLUTION...

The Hercules High-Shear Viscometer —which accurately measures and charts the complex flow characteristics and behavior of high-solids pigment suspensions to an extent previously unobtainable, thereby helping papermakers to design coatings for performance on high-speed coating processes.

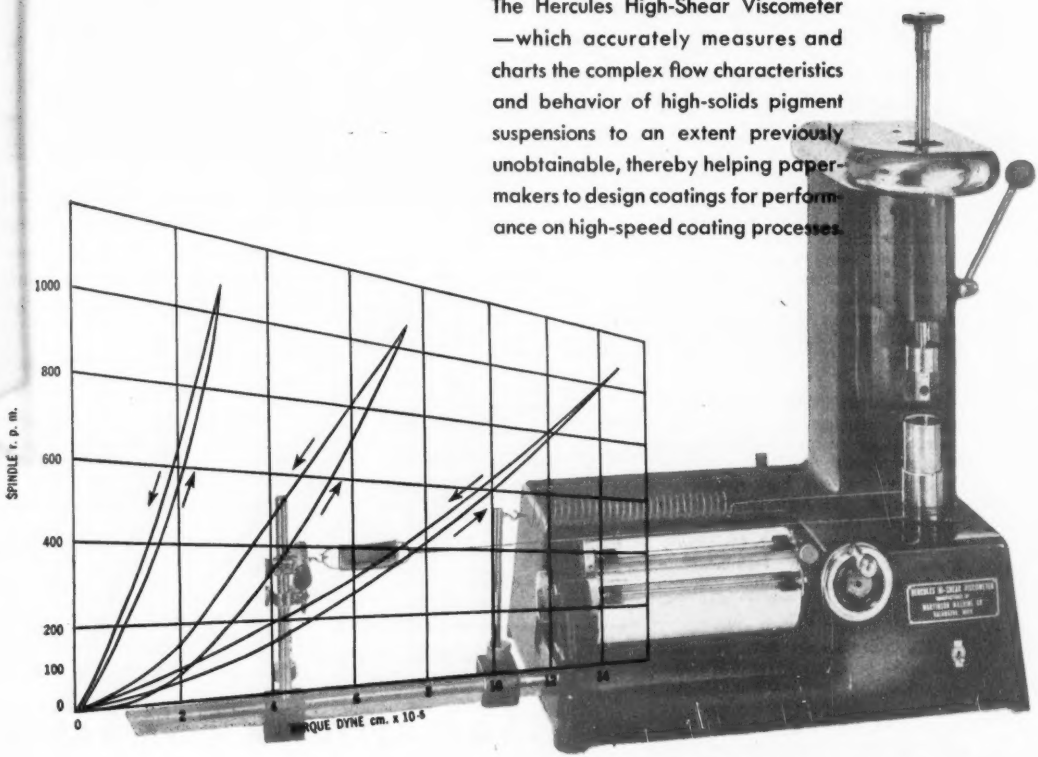


Illustration shows the Hercules High-Shear Viscometer and rheograms taken with it of typical operable machine coating colors.

SYNTHETIC RESINS • CELLULOSE PRODUCTS • TERPENE CHEMICALS • ROSIN AND ROSIN DERIVATIVES

The Hercules High-Shear Viscometer

Developed by Hercules, in its own laboratories for research on high-speed casein coatings, the High-Shear Viscometer is now used by many paper mills. Other industries also are finding this instrument to be a valuable addition to their research equipment. These process industries are using the High-Shear Viscometer to better predetermine the performance of such products as adhesives, paints, ceramic compounds, and printing inks where these are subjected to high rates of shear or agitation in manufacture or use.

This development is typical of varied approaches used by Hercules in application research for its chemicals . . . with a view to improving their working characteristics and broadening their field of application.

HERCULES POWDER COMPANY 992 Market Street, Wilmington, Del.
Sales Offices in Principal Cities

RESULT...

High-quality casein bonded coated paper for offset printing can now be produced faster and cheaper. In addition, the advantages of brightness, bonding strength, waterproofness, and printability characteristics of casein are now permitted in high solids machine coatings.

New Experiment Station Wing

A new 3-story wing addition to its main laboratory building near Wilmington is the latest expansion by Hercules in its research facilities over the past five years. The new wing provides 26 new laboratory units accommodating 51 chemists, and increases working space in the main laboratory building by 60%.

These increased facilities include two new air-conditioned laboratories for testing paper and textiles. Two new laboratories have been provided to house microanalytical research equipment. Two laboratories are earmarked for physicists for spectrometry, and to house a newly acquired mass spectrometer. A specially designed laboratory has been set up for work on hot lacquer.

Try This for Size

A new and simplified automatic emulsifier for rosin size has just been introduced to the paper trade by Hercules. Lower in price than the original emulsifier introduced by Hercules in 1948, the new unit meets the need for a still more economical and simplified process.

The new unit, like the original unit, offers paper mills savings in labor costs and space requirements. It provides rosin emulsions of greater uniformity of concentration and quality.

Paper mills may obtain specific details on cost, layout, construction, and other pertinent information by writing to Hercules.

Conserve Scarce Phenolics

Technical data indicating the opportunities that low-cost "Vinsol"® resin offers in conserving phenolics are included in a new booklet "Hercules Vinsol Resin, A Modifier of Thermosetting Phenolic Resins." Today, especially, it will pay you to evaluate "Vinsol", as a phenolic extender or modifier. Priced at less than 5¢ per pound, this dark-colored, high-melting thermoplastic offers substantial savings in total resin costs.

At present, many Hercules chemical materials are not available. This advertisement is intended to keep you informed of latest developments, and to suggest possible future applications in your business.

CHLORINATED PRODUCTS • OTHER CHEMICAL MATERIALS FOR INDUSTRY **HERCULES**

GC51-2

DOUBLE CHECKED

FROM RESEARCH TO INDUSTRY

PENTALENE 95

(AMYLNAPHTHALENES, CRUDE MIXED)

Sharples Pentalene 95 is an undistilled reaction product containing monoamyl, diamyl and polyamyl derivatives of naphthalene.

This product is suitable for many applications where dark color and wide boiling range are not objectionable. Among the suggested uses are:

- **Intermediate for anionic surface active agents**
- **High boiling solvent**
- **Plasticizers**

For additional information, prices and samples, write to Dept. A

SHARPLES TRADE MARK CHEMICALS

SHARPLES CHEMICALS INC.

80 E. JACKSON BLVD., CHICAGO

350 FIFTH AVENUE, NEW YORK

Reform in Drug Trade Lists

Pharmaceutical manufacturers are heeding the cry for standardized catalogs, join wholesalers, retailers, government agencies and associations in program to end chaotic drug trade lists.

Reform will boost drug sales, expedite distribution of information by making price and therapeutic data readily accessible. Enthusiastic response has greeted one manufacturer's new catalog.

Chet Orchard, long-time crusader for standardization of pharmaceutical catalogs, now has indications that his is no longer a voice in the wilderness. One-hundred fifty members of the American Pharmaceutical Manufacturers Association gathered at the fashionable Edgewater Beach Hotel in Chicago recently to hear him and a panel of government, wholesale, and retail spokesmen tell them that present variations in catalogs were costing them dollars in loss of potential sales, as well as mutiplying the headaches of wholesalers, retailers, the military, and the NPA in supplying needed drugs to the armed forces and civilians.

Chet, who is midwest sales manager for McKesson-Robbins, has been missing quite a few meals at home to accomplish his extra - curricular work in support of this program. He feels that it will be worth it when standardization movements bring increased sales, greater efficiency, and fewer headaches at the office. That the drug industry wants to see the end of its "Tower of Babel" is clear: A four-hour session was devoted to standardized lists at the convention.

Paul de Haen, vice-president of Ames Co., Inc., said, "Standardization can mean either regimentation or simpification—we are aiming at simplification." The program is aimed at standardizing catalog sizes and formats, clarifying price quotations, adding important symbols and references, and standardizing shipping case sizes. Better distribution of information and increased sales are expected.

Early in February representatives of manufacturers, wholesalers, retailers, government agencies, and all associations representing these groups asked the Commodity Standards Division of the U. S. Dept. of Commerce to arrange and referee the standardization program. The CSD is a recent consolidation of the Division of Simplified Practices and the Division of Trade Standards.

CHET ORCHARD: A way out of the wilderness seems assured.

No boondoggling here: "Information wanted quick" is the slogan of the snowballing standardization sessions. As a result of the first conference, three full-line houses have already made desirable catalog changes. One house sent out 40,000 of the "new look" catalogs. Receipt was acknowledged by 36,000 retailers, and 17,000 of them took their own time to make highly complimentary comments; none was unfavorable!

One druggist's comment explained this extraordinary response: "Sometimes it takes as much time to determine how much to charge the customer as it does to compound the prescription. The item must be checked in the annual directly to find the manufacturer; manufacturer's catalog index checked to find page number; page number checked to find price and discount; then Einsteinian calculations to find the price."

Wholesalers agree that standardization will mean speedier, more efficient handling of orders and will increase sales all along the line. Such enthusiasm will undoubtedly result in a boost of present $580 million annual sales.

Catalogs presently range from vest-pocket to letterhead size and may be looseleaf, permanently bound, ring-bound, or postbound. Filing is impossible, salesmen fumble through their cases, and getting the desired information is almost impossible.

What users want: Retailers ask for a 5½ x 8½ in size. Fair trade prices are standardized in this size, and an additional physical reason is that shelf heights have been reduced to 9-10 in since prohibition was repealed and whiskey left the back shelves of the drug store. Wholesalers ask for an 8½ x 11 in size in keeping with the standardized catalogs of manufacturers of other goods they sell. Both are standard paper sizes and probably both will be used, depending on the field of distribution.

Manufacturers with thick catalogs are asked to supply their own binders. If those with thinner catalogs cooperate by standardizing sizes, 93% of the retailers have indicated willingness to buy their own binders.

Listings at present are arranged either alphabetically or by groups, such as capsule, ointment, ampoule, etc. In the group method, as many as 18 subdivisions have been used, and the lack of a general index makes it necessary to check almost every group when trying to find information. The majority agree with the military that the alphabetical listing is far superior.

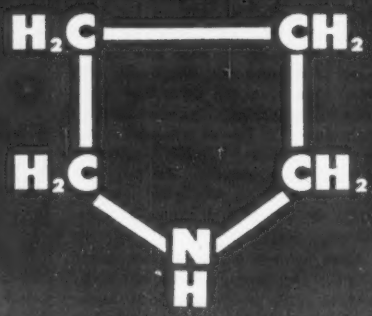
Druggist doubles as detailer: Manpower shortage will unquestionably be helped by the program. Pharmaceutical retailers formerly carried cases of jumbled catalogs weighing 10-50 lb—depending on the size of the man, his ambition, and his willingness to carry them. The efficiency of standardization will allow him to carry more material at less weight and to get more information across to the doctor or druggist in less time.

In addition, this improved presentation will result in druggists doing detail work for the manufacturer that has formerly been neglected because of tediousness. With new drugs coming out at the rate of 50 a month, doctors find it difficult to keep up with them and must consult the druggist for therapeutic information. If this information is made easily accessible, the druggist will gladly do a selling job for the manufacturer.

Pricing methods now used are a confused hodge-podge employing some 15 different designations. Some lists are so vague that the druggist is never quite sure whether the quoted

AVAILABLE IN DEVELOPMENT QUANTITIES FROM DU PONT

PYRROLIDINE



PHYSICAL PROPERTIES

Appearance	Colorless, mobile liquid
Odor	Penetrating, amine-like
Molecular Weight	71.12
Freezing Point (Tech. Grade)	−63°C.
Boiling Point	86-87°C.
Specific Gravity, 20/4	0.8618
Index of Refraction, N20/D	1.4430
Flash Point (Tag Closed Cup)	3°C.
Solubility	Miscible with water and most organic solvents

In water forms base with dissociation constant of 1.3×10^{-3}.

This cyclic secondary amine is now being produced synthetically and is potentially available in commercial quantities. A wide variety of unusual compounds can be formed by reactions involving addition, condensation, acylation, and alkylation. Outstanding chemical properties include the following:

Moderately strong organic base. Solubilizer for acidic materials.

Functions as a catalyst and reaction medium for certain organic reactions.

Highly reactive, versatile chemical intermediate which may afford a practical way to make profitable products. For example:

- **With carbon disulfide, yields *rubber accelerators* similar to those obtained from piperidine.**
- **With alkyl halides, gives N-alkyl pyrrolidines which can be converted to quaternary bases of possible use as *sterilizers* and *surfactants*.**
- **Useful for introducing the pyrrolidyl ring, a *physiologically active nucleus* found in many natural products such as alkaloids.**
- **With ethylene oxide, gives an *alkanolamine*, N-hydroxyethyl pyrrolidine.**

A REQUEST *on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.*

DU PONT ELECTROCHEMICALS

DUPONT

Better Things for Better Living . . . through Chemistry

price is what he paid for the item or what he should charge for it.

Proposed lists will be clearly labeled as retailer or selling prices, and if fair trade prices and selling prices vary, both will be listed. Confusion in the past has resulted in unintentional underselling of fair trade prices by druggists and to druggists by hospital pharmacies. The confusing and antiquated per dozen price will probably be supplanted by a decimal system. The decimal system will show at a glance the economy of larger quantity purchases by a simple shift of the decimal point. Additionally, it will simplify ordering and reduce stagnant inventories.

The retail druggist needs two libraries—a cost library in order to stay in business and a therapeutic library to answer professional questions. Both should be uniform for filing purposes. Segregation of prices and therapeutic data from each other offers many advantages. Nine different price lists are needed to offer products to wholesalers, retailers, hospitals, doctors, military, and government agencies. At present, with prices and therapeutic data printed together, nine catalogs must be printed.

Segregation will allow economical printing of a single therapeutic catalog to be sent to all accounts, accompanied by the proper price list for that type of account. In the therapeutic section, manufacturers should give full information on their specialties which may not be described elsewhere, but need give only a line or two of essential information on common items.

Symbols will be added to the catalog. An Rx will preface each item which can be dispensed only on prescription and will also be used to identify packages of these items segregated from the rest of a wholesaler's shipment to a retailer. Reference symbols to further information in the common directories will also be listed with each item.

Standard sizes: Shipping cases will be standardized in size and number of items contained and so indicated in the new catalog. The military supports this measure and agrees to conform to it as a means of eliminating the delay and extra expense involved in World War II by military specification of special sizes. NPA is also pushing this measure as a means of material conservation.

•

L. A. paint plant: General Paint Co. has just begun operation in its new million dollar paint and lacquer plant in Los Angeles. The 86,000-sq ft plant consists of an office building, factory, warehouse, maintenance building, pump house and nitrocellulose storage building. Feature of the unit is minimum interdepartmental hauling of bulk materials through effective positioning of equipment and maximum use of piping for liquids.

MacIsaac, Menke & Roach, Inc., Los Angeles, installed principal equipment in the plant.

•

Stiffer insecticide fee: Manufacturers of insecticides sold in North Carolina may soon be paying more than the present inspection fee of $10 for each brand name. At a hearing on a request for funds to run the state's testing program for insecticides sold in the state, the agriculture commissioner was asked if a higher fee would obviate the need for the appropriation in question. He thought the "program could run itself," and suggested only a slight raise. One state senator, however, proposed a fee of $100, remarking, "There's a big profit margin in this stuff."

•

Adhesives specs group: In anticipation of greater military requirements for specialty adhesives, a Resin Adhesives Technical Subcommittee has been appointed by the Manufacturing Chemists' Association. It will work with the government on new specifications in this field.

Ice Supplement

Fumaric acid and sodium benzoate are the ingredients in a new preservative to supplement the icing of fish and other fresh foods during shipping and storage. Called Fran-Kem, it is now being nationally distributed.

This preservative culminates a long search for a new product by its developer, Washington Laboratories, Inc., Seattle, Wash., which saw synthetic vitamins reduce to a fraction of its former volume its rich business of extracting vitamin oils from fish liver. The company compounds the product, but its subsidiary, Fran-Kem, Inc., Chicago, is the exclusive distributor, and has set up outlets in about 44 states. It is being sold in 25- and 50-lb Pliofilm bags.

The new preservative is a powder which can be used in the ice aboard a fishing vessel, in cooking water for crabs or shrimp, or as a dip for vegetables and fruits. It can also be dissolved in water used to make ice. Solutions of one part to 2,000 are recommended in ice, one to 1,000 for

DELTA
CHEMICAL WORKS

Over 5,000 chemicals in stock for
Immediate Delivery

Watch these sample pages from our catalogue:

Isatin
Isethionic Acid (Barium Salt)
Isoandrosterone
Isoascorbic Acid, d(—)
Isoascorbyl Stearate
Isobutyl Acrylate
Isobutylamine
Isobutyl Methacrylate
Isobutylquinoline
Isobutyraldehyde
Isobutyric Acid
Isocholesterol
Isocitric Acid
Isocoumarin
Isocrotonic Acid
Isocrotyl Chloride
Isocytosine
Isoleucine, l(+), natural
Isoleucine, d(—)
Isoleucine, dl
Isophthalic Acid
Isopropenyl Acetate
β-Isopropoxypropionitrile
5-Isopropylamino-1-pentanol
N-Isopropylarterenol Hydrochloride
N-Isopropylbenzenesulfonamide
Isopropyl Crotonate
Isopropylhydrazine
Isopropyl Isocyanate
Isopropyl N-Phenylcarbamate
N-Isopropyltoluenesulfonamide
Isoquinoline
Isoserine, dl
Isosorbide
Isovaleric Acid
Itaconic Acid
Itaconic Anhydride
Kephalin
Kerasine
α-Keto Acids
α-Ketoadipic Acid
α-Ketobutyric Acid
2-Ketogluconic Acid
α-Ketoglutaric Acid
α-Keto-β-imidazolepropionic Acid
α-Ketoindolylpropionic Acid
α-Ketoisocaproic Acid
α-Ketoisovaleric Acid
α-Keto-β-methylbutyric Acid
α-Keto-4-methylpentanoic Acid
Ketosuccinic Acid
Kojic Acid
Kynurenic Acid
Kynurenine Sulfate, dl
Lactic Acid, l(—), unnatural
Lactic Acid, d(+), natural
Lactic Acid, dl
Lactobionic Acid
Lactonitrile
Lactose, d(+)
β-Lactose
Lanthanum
Lanthanum Acetate
Lanthanum Nitrate
Lanthionine
Laurone

Ask us for others!

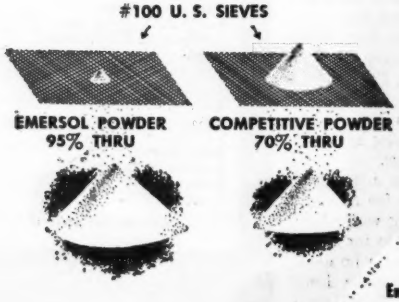
DELTA CHEMICAL WORKS
23 West 60th St. New York 23, N. Y.
Telephone Plaza 7-6317

NOW! New EMERSOL Powdered Stearic Acids Finest Particle Size Available

Now . . Emery offers the finest particle size of any powdered stearic acids available. In most cases, performance is improved, efficiency increased.

This smaller particle size, coupled with the same outstanding characteristics and stability exhibited by all Emersol Solid Acids in any form, makes Emersol Powdered Stearic Acids the best money value today!

Screen Analysis Tests Prove Smaller, More Uniform Particle Size



How Can These Properties Work For You?

Lubrication . . . Mold lubricant and release compound for molding of plastics, rubber, powdered metals, tablets, pellets, etc.

Affinity for metals . . . Facilitates grinding of metallic powders and pigments. Gives good leafing characteristics to bronze and aluminum pigments. Makes metal powders oxidation resistant and free flowing.

Dusting Ability . . . Efficient dusting agent due to fine particle size. Its polar nature provides a molecular attraction for metals.

Easy Removal . . . Easily saponified, these powdered stearic acids can be removed with nothing more than a mild alkaline wash.

U.S.P. or N.F. Quality . . . Emersols 130 and 132 used in molding of pharmaceutical tablets, confections and other food products.

If this form of high-quality, powdered stearic acids appears to be of possible use in your operations, please contact our Development and Service Department, which solicits the opportunity of working with you in your utilization of these products.

EMERY INDUSTRIES, INC.

Carew Tower • Cincinnati 2, Ohio

Export Dept.: 5035 R. C. A. Bldg., New York 20, New York

BRANCH OFFICES

3002 Woolworth Bldg., New York 7, N. Y.
401 N. Broad St., Philadelphia 8, Pa.
187 Perry St., Lowell, Mass.
420 Market St., San Francisco 11, Calif.

Warehouse stocks also in St. Louis, Buffalo and Baltimore

Specify Emery Products When You Want the Finest!

dipping, glazing, etc. Nontoxic, it is composed of equal parts of fumaric acid and sodium benzoate, which halt the enzymatic, oxidative and bacterial changes that not even freezing can totally prevent.

Better ice, higher grade: In its most recent test on a fishing vessel, bottom fish caught in Southeastern Alaska graded No. 1 ten days later in Bellingham, Wash. Ten days is considered to be the maximum time bottom fish can be held aboard a fishing vessel, and then they usually cannot be accepted as No. 1. In another test, halibut graded No. 1 sixteen days after they were caught and preserved with Fran-Kem ice, while fish held in ordinary ice for six days on the same boat graded out No. 2. These results indicate that use of Fran-Kem can reduce the amount of ice required by fishing vessels and extend their range.

Previous attempts at developing preservatives that could be used with ice have been based on unstable materials that have solidified the ice after it has been crushed and blown aboard fishing vessels, trucks and rail cars. This has made it virtually impossible to use in filling the "poke" of the fish after gutting, or filling the cavities of crates. It is never necessary to chip out Fran-Kem ice, declares George Burchard, president of Washington Laboratories.

Farmer as well as fisherman: Crabs and crab meat, among the most perishable seafoods, have been kept fresh with the new preservative three times as long as would be possible normally, Burchard says. Lettuce, cauliflower and oranges all have been treated successfully, with resultant reduction in cullage and improved quality.

The name "Fran-Kem" was coined from the name of Lawrence Frandsen, Washington Labs research director, and the phonetic spelling of the first syllable in chemistry.

Apparently Seattle's big stake in fishing makes companies in that area preservative-conscious, for Washington Laboratories is the second Seattle company to market a new preservative. The first was Liquid Ice Corp. Its product contains sodium benzoate, Chloramine T and sodium chloride.

•

Memphis drug plant: The new Memphis, Tenn., plant of Plough Inc., drug and household products manufacturer, will be opened officially in June. It covers an area of 250,000 sq ft, houses executive offices and 90% of the company's manufacturing and warehouse facilities. The new plant replaces nine buildings formerly occupied in Memphis.

OLDBURY

ELECTRO-CHEMICAL COMPANY

•

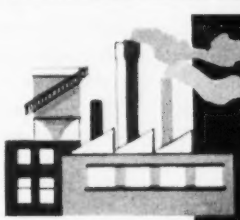
PHOSPHORUS (Yellow or White)	PHOSPHORIC ANHYDRIDE
PHOSPHORUS OXYCHLORIDE	PHOSPHORIC ACID
PHOSPHORUS TRICHLORIDE	SODIUM CHLORATE
PHOSPHORUS PENTACHLORIDE	POTASSIUM CHLORATE
PHOSPHORUS PENTASULFIDE	POTASSIUM PERCHLORATE
PHOSPHORUS SESQUISULPHIDE	HYPOPHOSPHITES
AMORPHOUS PHOSPHORUS	OXALIC ACID (Powdered or Crystal)

ZINC PHOSPHIDE

•

Plant and Main Office:
NIAGARA FALLS, NEW YORK

New York Office:
19 RECTOR ST., NEW YORK 6, N.Y.



COME SOUTH TO
LOUISIANA

- Mild Climate
- Fine Rail, Water & Air Transportation
- Good Living Conditions
- Cooperative Labor
- Abundant Natural Resources

Existing plant facilities available for prime or sub contracts in many lines of defense work.

For further information, address—

Department of
COMMERCE AND INDUSTRY
State of Louisiana · Baton Rouge, La.
Mary Evelyn Dickerson, Executive Director

The dependable source of superior amine condensate!

ULTRAPOLE S

(FORMERLY ULTRAPONE S)

Ultrapole S is a 97%-100% active amine condensate with excellent wetting and foaming properties. It is compatible with soap and synthetic detergents, and has good detergent properties on cotton, wool and rayon. The pH of a 1% solution is 9.2 at 25° C. Solutions of Ultrapole S have considerable body, and reach a maximum viscosity at 8%-10%.

ULTRAPOLE G

(COMPATIBLE WITH ALKALIES)

Ultrapole G is a variant of Ultrapole S, which has been designed so that alkali, such as soda ash and phosphates, can be incorporated in solutions. These additives materially increase the detergency of any condensate.

Possibly Ultrapole G or S can help solve your detergent problems. Write or phone for specifications and quotations.

headquarters for the following

OUTSTANDING ALKYL ARYL SULFONATES

SULFRAMIN* AB-40 FLAKES
SULFRAMIN* AB-40 POWDER
SULFRAMIN* E LIQUID
SULFRAMIN* SPRAY BEADS
SULFRAMIN* AB CONCENTRATE FLAKES
SULFRAMIN* AB CONCENTRATE POWDER
SULFRAMIN* KE LIQUID
SULFRAMIN* AB SLURRY

*TRADEMARK REG. U.S. PAT. OFF.

ULTRA CHEMICAL WORKS, INC.

PATERSON, N. J. • LOS ANGELES, CALIF. • JOLIET, ILL.

ULTRA Chemical WORKS

KARL PAUL LINK: The public has heard about his warfarin.

Emphasis on Rats

Rodenticide manufacturers this month are moving fast to satisfy dealer demand for products containing the new rodenticide warfarin. The material's unique and safe action has been winning supporters since it was released for consumer sale last July, but the present demand is being spurred by an article on the new rat killer in the current Reader's Digest.

Although specialties manufacturers sell the product under their own colorful trade names, retailers are not losing the opportunity to cash in the current publicity. Voo-Doo "42", for example, is the trade name of the product of Xterminator Products Corp., Jersey City, N.J. However, stores carrying it emphasize that it contains warfarin, quote from the *Reader's Digest*, "Sure death to rats," in promotional literature and newspaper ads.

Biggest selling points for warfarin are that rats do not become bait-shy and that the material is relatively safe. It is a good rat killer, but it must be consumed over several days by the rodent to be fatal. The rat or mouse literally eats itself to death.

Good news at Wisconsin: The current warfarin surge is no doubt pleasing to the Wisconsin Alumni Research Foundation which controls the patents on the material, and to Dr. Karl Paul Link, the Wisconsin professor who discovered it (*CI, July 1949, p. 31*). Link was working on derivatives of the blood anticoagulant Dicumarol, found that 3-(α-phenyl-β-acetylethyl)-4-hydroxycoumarin caused rabbits to bleed to death. That was in 1942, and the chemical was tagged Compound 42 after the number of the research

ORGANIC PEROXIDES

LUPERSOL* DDM

60% METHYL ETHYL KETONE PEROXIDE IN DIMETHYL PHTHALATE

WATER WHITE LIQUID

11% ACTIVE OXYGEN

LOW TEMPERATURE CATALYST FOR POLYESTER RESINS

TECHNICAL DATA AND SAMPLES AVAILABLE UPON REQUEST

*REGISTERED TRADEMARK

LUCIDOL DIVISION
NOVADEL-AGENE CORPORATION
BUFFALO 5, NEW YORK

AMERICAN POTASH & CHEMICAL CORPORATION
122 EAST 42nd STREET NEW YORK 17, N. Y.
38 SO. DEARBORN STREET CHICAGO 3, ILLINOIS
214 WALTON BUILDING ATLANTA 3, GEORGIA
3030 WEST SIXTH STREET LOS ANGELES 54, CALIF.

WH&C
chemical specialties

ANIMAL OILS

VEGETABLE OILS

FATTY ACIDS

Phone: CHelsea 3-6048

SINCE 1838

Welch, Holme & Clark Co., Inc.
439 WEST STREET NEW YORK 14, N.Y.

Warehouses in
New York and Newark, N. J.

DRYMET*
ANHYDROUS SODIUM METASILICATE

A granular, free-flowing alkali with the following properties:

Formula . . . . . Na_2SiO_3
Molecular weight . 122.06
Melting point . . . 1088°C
Na_2O 51%
pH in a 1% solution 12.75

Quickly and completely soluble in water up to a concentration of 35%

DRYMET is the most highly concentrated form of metasilicate available because it contains no water of crystallization. Unique among alkalies—it combines strength with buffering action which prevents abrupt changes in pH. If you use alkali—investigate the advantages of DRYMET.

Cowles DRYMET

WRITE FOR DRYMET File Folder containing complete technical information.

*Reg. U. S. Pat. Off.

COWLES CHEMICAL COMPANY
71st Euclid Building
Cleveland 3, Ohio

SPECIALTIES. . . .

paper describing it. Link thought it "might make a good exterminating agent."

A reactivation of work on 4-hydroxycoumarins in 1947 showed that Link was right about Compound 42, since it was the best of the lot as a rat and mouse killer. The Fish and Wildlife Service began a test program on this material that caused rodents to bleed to death. After a nationwide cooperative testing program carried out by that agency, the Dept. of Agriculture, the Public Health Service, and other interested people from industry and government, the material, now given the generic name warfarin instead of Compound 42 of W.A.R.F. 42, was released for general consumer sale.

Prentiss Drug & Chemical Co. and S. B. Penick and Co., both New York City firms, are handling its distribution. Warfarin is available from them for manufacture into prepared baits or packaged for consumer use under private label.

•

Chlorox plant: Chlorox Chemical Co., manufacturer of the well-known household bleach and disinfectant Chlorox, is planning to build a $250,000 plant in Charlotte, N.C.

•

Atwood Adhesives, Inc., Seattle, Wash., will boost its production capacity 50%. The program, estimated to cost $40,000, involves construction of a 50x66-ft two-story frame addition to house processing equipment and provide storage space. It is scheduled for completion about June 1.

W. H. Atwood, head of the adhesives firm, was with National Adhesives before starting his own company in 1946.

•

Pelletized fertilizers: The Davison Chemical Corp. will soon begin limited production of homogeneous granulated complete fertilizers by an improved process at its Perry, Ia., plant. In such products, the fertilizer components are combined in small granules, each containing the ingredients in the proper proportion. Advantages claimed over pulverized forms: even application from farm machinery without loss from blowing; less caking in storage; in the soil, less tendency to "fixation" of the phosphate (change to a relatively unavailable form).

Granulated superphosphate is very popular in this country, but complete fertilizer has not been available in this form on a comparable scale. In England, however, over three-quarters of the complete fertilizers produced are granulated.

P. R. SHAYS: "The merit rating mirrors the man's performance."

Keeping "Sell" in Salesmen

Chemical managements are beginning to worry about how to keep "missionary" salesmen satisfied in a prosperity era.

Schenley Industries Inc. incentive plan based on merit ratings offers an example of one solution to problem.

CIW interview with Philip Shays of Schenley, author of the plan, discovers why it began and how it works.

This week as company annual reports bearing statements of record sales tumble through the mails, many chemical process companies are wondering how to keep their salesmen job-satisfied in an era of prosperity. And several managements have begun to eye the success of the merit rating and incentive program Schenley Industries Inc., uses for its "missionary" salesmen as a possible solution.

When the Schenley plan was introduced about three years ago, many critics claimed that it was not practical. The fact that the employees affected were sales personnel, and unionized at that, caused grunts to arise from several quarters that the plan wouldn't work.

In an exclusive interview with CHEMICAL INDUSTRIES WEEK, Philip R. Shays of Schenley, author of the plan that "wouldn't work" explained how and why it works.

Beginning: When Shays came to Schenley in 1948 as Administrative Director of Personnel and Labor Relations he brought with him 20 years of negotiation experience with United Artists, Henry Kaiser and Republic Aviation. He also brought a firm conviction that the old pattern of round after round of wage increases could not go on much longer. Though he recognized that legitimate labor leaders had a right to try to perpetuate themselves in office by "producing" for their constituents, Shays felt that across-the-board profit for certain types of work, such as sales, would have to give way to incentive systems based upon individual performance.

At this point Shays went to the leaders of the Distillery, Rectifying and Wine Workers' International Union of America and put his "incentive" proposal on the line. Their decision was an emphatic yes. And a contract was signed that contained a radical merit rating and incentive plan for Schenley Distillers Inc. "missionary" sales forces in the New York, Boston, Chicago and New Jersey sales territories.

Enter salesmen: Shays points out that it is one thing to translate the definite units of physical work output for an incentive plan. But it is quite another to develop a yardstick for measuring the intangible production of a salesman . . . and of the "missionary" type at that.

Most of Schenley's sales, Shays explains, are made through wholesale distributors. The function of the missionary salesmen, who are company employed, is to promote customer good will, interest and acceptance of Schenley products. Only rarely does the "missionary" sell or take orders. These missionary sales people belong to the Distillery, Rectifying and Wine Workers' International Union. And their earnings range from $4800 to $6000 annually, plus end-of-year bonuses.

The plan: Under the terms of the interesting Schenley contract, each of the company's 100 "missionary" salesmen is rated by his local sales manager quarterly on the basis of (1) territorial development (2) advertising displays placed (3) number of calls made, and (4) advertising material placed. At all times the individual salesman and his union representative are aware of these ratings, Shays points out.

At the beginning of each quarter the "missionary" sales force for a particular area is briefed as to the sales objective in that territory for the period. After this briefing each salesman submits to his sales manager his own program for what he thinks he can do to reach the overall objective. This estimate of the man's ability and potential by the man himself also comes to the attention of the personnel manager and the union representative.

At the end of each quarter the individual salesman's accomplishments are checked against the estimated goal which he himself helped establish, says Shays. Those men who haven't done above average or better for the quarter being measured are talked to by the sales manager, personnel director and union representative and are guided and encouraged to improve their individual performances.

The completion of the fourth quarterly performance review is the signal for the company to prepare a yearly average ranking of the individual salesmen. This rating reflects the previous quarterly rankings of the men. On the basis of this final 12 month report on standings, the company negotiates "in grade" adjustments for

those salesmen who have maintained the maximum salary and who have earned a position of "above average." The company and the union have previously agreed on a 5% increase to such persons provided the increase does not bring a salary over the maximum.

Those men who reach or exceed the maximum for the month are included in an overall ranking. Not, however, for the purpose of salary adjustments but for consideration in the awards made from a special fund of "prize money." Proof: There's little doubt that the plan has worked out well. Union leaders, management and the most important party in the whole thing, the men themselves, feel that it has taken a big step toward the "sustained prosperity" ideal that Schenley's board chairman, Lewis S. Rosenstiel, has recommended to all industry. The general belief is that if it works at Schenley it can work elsewhere too. And for the chemical industry, whose main sales effort is directed along "missionary" lines, that belief may offer a sound solution to an ever knottier problem.

Cavalcade

The Du Pont annual report, recently published, shows the company posted record production, income, and sales figures in 1950. In the report, the company casts an eye on the future, and says it is in a much stronger position to cope with the problems of a national emergency than it was before World War II.

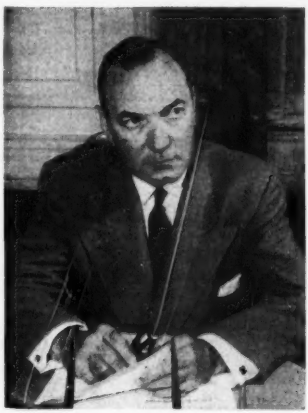
Sales for the year skyrocketed to $1,297.5 million. That was 27% higher than the previous record year of 1949. About $460 million – 35% of total sales – came from facilities placed in operation since 1945. In that period, Du Pont has erected 9 new plants and made additions and improvements on others. During that time, $550 million were spent for expansion.

The company says that the increase in dollar volume of sales was due primarily to increased production. Price increases on certain chemicals toward the end of the year caused a 6% increase in company's price index. But for the year as a whole, prices showed little change from 1949. This was rather significant in that the index showed an increase in raw material costs of 29%, wages were increased, and the Bureau of Labor Statistics showed a 16% increase in all wholesale prices.

Net income from Du Pont operations was $187.2 million; net income from all sources (including dividends from General Motors) amounted to $307.6 million. The 125,504 stockholders received dividends of $6.52 a share including $2.50 a share from GM. For 1949, net income from all sources was $213.7 million, dividends totalled $4.52.

In the Black

Commercial Solvents now officially joins the family of chemical companies reporting 1950 as a banner year. The annual report—released last week—reveals that net income and sales, although not approaching the peak of immediate post war years, increased substantially over 1949.



J. ALBERT WOODS: Confident for '51 after a good year in '50.

Since a majority of the company's 200 products are essential in either a peace time or war time economy, President J. Albert Woods looks confidently at 1950, expects the upward trend to continue.

Sales in 1950—at $44,991,376 were up 35% over 1949. The increase reflected a sharp rise in third quarter sales. Another factor responsible for the boost in the dollar volume, says Woods, was the improvement in the long depressed price level of a number of chemicals.

Last year saw a streamlining of the sales department as a result of a study made in July. Many of the steps recommended by the study were accomplished in 1950 and Woods expects the new system to be in full operation by the end of 1951. A new organization structure will enable the vice president in charge of sales to devote his time to managerial duties and to work in closer cooperation with research and production.

Net income at $5,177,603 ($1.96 a share) was 54% higher than 1949. Stockholders received $3,296,097 in dividends ($1.25 a share). And the six months excess profits tax took its share—federal taxes accounted for $3,307,900.

Investments in plant and equipment amounted to $1,585,278; Woods says the company will spend an additional $2 million this year to complete construction authorized in 1950.

Fertilizer Bills

Eleven proposed laws in the various state legislatures and in Washington aim to regulate fertilizer or improve present control over it. But only one or two of the state laws are believed to have a chance of passage.

In Arkansas, a new law would require tonnage reports and inspection fees not only on fertilizer imported into the state but also that made and sold within the state.

In Texas it is proposed to "loosen up" the definition for fertilizer so that any material containing more than 1% of total phosphoric acid, or of potash, or of nitrogen used to promote growth of crops, may be called fertilizer.

A proposed law in Georgia would simplify collection of inspection fees.

A Minnesota proposal would amend law by lowering the total minimum plant food content of mixed fertilizers to 12 percent from the present 27 percent.

An Idaho Senate proposal would make it unlawful to sell or distribute animal fertilizer or soil which contains noxious weeds or seeds.

Nebraska also has a proposed control law. One of its features provides that the fees collected shall constitute a fund to promote soil conservation and sound soil fertility practices in Nebraska.

A California bill would require that any agricultural mineral, the principal constituent of which is calcium sulfate, shall be guaranteed "in terms of gypsum." Another California bill would prohibit the use of sardines as fertilizer. A third bill would reduce the inspection fee on fertilizer from present 20 cents to 15 cents a ton.

A Wisconsin bill proposing to discontinue publication of fertilizer control analyses has in effect been killed by the adoption of an indefinite postponement report.

Federal too: On top of all this a strict federal fertilizer control law is now in Congress. It would regulate the registration, manufacture, labeling and inspection of fertilizer shipped in interstate commerce. It calls for an annual registry of all types of fertilizer and a 10-cents-per-ton inspection fee.

Washington, D. C. fertilizer and agricultural chemicals experts say the proposed law hasn't a chance of even getting out of the House Committee on Agriculture. And spokesmen for the fertilizer industry say that it cannot be likened to the present federal laws on seeds and insecticides. They claim it's similar to proposals made for a number of years. The U.S. Department of Agriculture has never come out in favor of the bill. The feeling there is that the problem doesn't require federal intervention since fertilizer is under individual state control now.

Foreign

ECA Funds: France has obtained permission from the Economic Cooperation Administration to buy (with ECA funds) $1,491,000 worth of industrial chemicals and chemical preparations (excluding fertilizers, synthetic rubber, and toilet preparations). France has also received permission to purchase $120,000 worth of industrial alcohol.

ECA funds were made available to Italy to buy $700,000 worth of phosphate rock from the United States and its possessions.

•

Egypt: A 50% decrease in the domestic production of caustic soda and a suspension of imports from Britain have caused a serious shortage of the vital chemical. Egypt's consumption for the last ten years has averaged 9,000 tons. Domestic production accounted for 6,000 tons, the remainder was imported from Britain. Consumption for the last few months has been at an annual rate of 17,000 tons while production has fallen to 3,000 tons. At the same time, Britain banned all export of caustic until June.

The government has decided to allow the big soap factories and other firms with a large stock of caustic to keep only enough to meet requirements for 10 months. The remainder will be taken over by the government for distribution among smaller plants. This measure will relieve the present crisis until imports from Britain arrive.

Caustic soda is now sold at $171 a ton. Previously, it had been sold for $100 a ton.

187
Reasons why!
INDONEX
REG. U. S. PAT. OFF.
PLASTICIZERS
are used widely in Resin, Wax and Pitch compounds
Laboratory tests show these versatile plasticizers to be compatible in modifying proportions with 187 of 202 compounds tested.

INDOIL® CHEMICAL PRODUCTS
INDOIL CHEMICAL COMPANY
910 South Michigan Avenue
Chicago 80, Illinois

MONSANTO
CHEMICALS FOR PLASTICS

FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information. Here you will find suggestions and application ideas selected to help you improve your products, lower your production costs, increase your sales. More information will gladly be furnished on request.

MONSANTO REPORTS to users of plasticizers

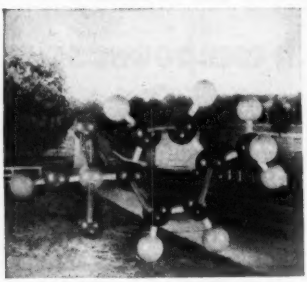
The needs of national defense, added to the extra requirements stemming from the rapidly growing popularity of plastics products, have created demands in excess of Monsanto's capacity to produce Santicizers and other quality plasticizers.

To meet the urgent needs of the present and the growing demand which we foresee in the future, we are expanding our capacity in both phthalate and phosphate plasticizers. We hope to be making deliveries from this increased production late in the current year or early in 1952.

HELP FOR YOU NOW

Today, we offer our customers technical assistance based on the world's most extensive experience in plasticizers. In many instances we may be able to help you make the best possible use of any Santicizer* or other plasticizers we are able to deliver.

For information on this technical service, which is offered to you without cost or obligation, contact the nearest Monsanto Sales Office or mail the coupon.



Toluenesulfonic acid, technical, available for immediate shipment

Monsanto can make immediate shipment of toluenesulfonic acid, technical, an intermediate and a catalyst in certain organic reactions.

The product is a viscous liquid or semi-crystalline solid with a greenish-to-black color. Its molecular weight is 172.20. It contains a minimum of 94.0% toluenesulfonic acid, a maximum of 1.0% H_2SO_4, a maximum of 2.0% water and a maximum of 0.2% toluene. The Monsanto product is a mixture of approximately 80% para isomer and 20% ortho isomer. Toluenesulfonic acid is available from Monsanto in 100-pound Mauser-type steel drums.

ALSO AVAILABLE

In addition to toluenesulfonic acid, Monsanto can make immediate delivery of the following:

Monsanto Salt (Sodium ortho-chloro-para-toluenesulfonate)
Ortho-Aminobiphenyl
Ortho-Nitrobiphenyl

OTHER MONSANTO INTERMEDIATES

Benzyl Chloride
Benzoic Acid, Technical
Cyclohexylamine
Dicyclohexylamine
Dinitroaniline
Dinitrochlorobenzene
Meta-Chloroaniline
Meta-Nitrochlorobenzene
Ortho-Nitrochloroaniline
Ortho-Anisidine
Ortho-Phenetidine
Para-Anisidine
Para-Phenetidine
Para-Chloroaniline
Salicylic Acid, Technical
Thiourea

For further information, check your nearest Monsanto Sales Office.

New product controls bacteria and algae in cooling water

A new, low-cost product, with proved effectiveness in controlling bacteria and algae in cooling water, has been added to the growing family of Monsanto Chemicals.

The product, Santophen* 45 (Sodium trichlorophenate, technical), has been used for two years in cooling towers with capacities up to 600,000 gallons, and the results have confirmed laboratory investigations.

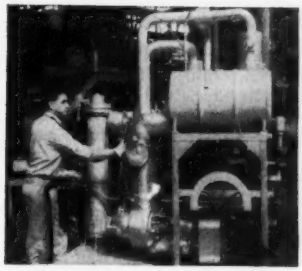
Santophen 45 can be used alone or as an extender for such hard-to-get chemicals as chlorine, sodium hypochlorite, sodium pentachlorophenate and others. It may be used to fortify chlorine and sodium hypochlorite, being effective against organisms which these two chemicals cannot control. Santophen 45 is effective in water with a low pH, an advantage over many other water-treating chemicals.

The use of Santophen 45 saves the cost of frequent cleaning jobs, with the loss of service from towers that are shut down.

Test Santophen 45 and see how effective it is. We are sure you will find that it will deliver the results you want, and we can assure you of ample supply by the time you are ready to use it. To get your sample, mail the coupon or contact the nearest Monsanto Sales Office.

New intermediates catalog is ready . . . send for copy

If you use intermediates, you will find Monsanto's new catalog interesting and worthy of a place in your files. The 12-page booklet contains technical information on more than 50 chemicals, many of which may be useful to you. For your copy of the catalog, which will be sent free and without obligating you, mail the coupon or contact the nearest Monsanto Sales Office.



AROCLOR 1248 has been used as the heat-transfer medium in units like this for more than eight years.

Aroclor 1248 is ideal nonflammable heat-transfer medium

Monsanto Aroclor* 1248 (chlorinated biphenyl), in more than eight years' service, has proved itself to be an ideal nonflammable, liquid-phase heat-transfer medium. It is used continuously at temperatures up to 300° C., and at pressures of 30 pounds per square inch or less.

As a heat-transfer medium, Aroclor 1248 offers the following advantages:

Freedom from fire hazard.

Viscosities to permit pumping at room temperatures.

Boiling point sufficiently above 300° C. to assure a liquid condition at all times.

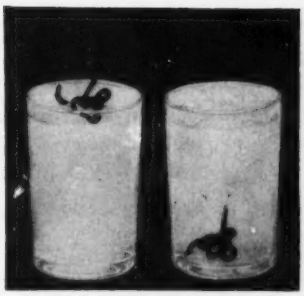
Stability against heat, with enough safety factor to accommodate accidental overheating.

Freedom from corrosive action against valves, piping and other equipment made of iron, steel, stainless steel or bronze.

Simple construction of heating equipment.

Aroclor 1248 is being used in both stationary and portable electric heaters with capacities around 40,000 B.t.u. an hour; and in gas heaters ranging up to 2,000,000 B.t.u. per hour.

If you have a job for a nonflammable, liquid-phase heat-transfer medium, consider Aroclor 1248. For details, contact the nearest Monsanto Sales Office or mail the coupon for Monsanto Technical Bulletin No. P-130.



In water, a sample of yarn may float for hours. Add Santomerse No. 1 and it is saturated rapidly . . . and sinks.

Santomerse No. 1 . . . versatile product in cleaning and process operations

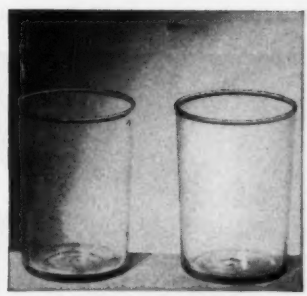
There's a good reason why Monsanto Santomerse* No. 1 is called the all-purpose detergent and wetting agent. The reason: *versatility.*

Santomerse No. 1 is used effectively for cleaning, penetration, dispersion, emulsification and spreading. With such versatility, all-purpose Santomerse No. 1 is adding to efficiency in numerous operations in industry, agriculture and homemaking.

Anionic Santomerse No. 1 has a minimum of 40% active alkyl aryl sulfonate, the remainder being principally sodium sulfate builder. This is the combination found best for high efficiency and economy.

Santomerse No. 1 is effective in hard or soft water, in acid or alkaline baths, in hot or cold solutions. In operations where the pH is important, Santomerse No. 1 can be used because it does not affect the pH to any marked degree and any change that does take place can be adjusted easily.

If you use a detergent and wetting agent in your industrial processes, or if you compound cleaners for resale, look into the possibilities Santomerse No. 1 offers. Write for a copy of Monsanto's booklet, "*Santomerse No. 1 All-purpose wetting agent and detergent,*" which gives much useful technical information.



Curds on the glass at the left were formed by soap in hard water. Santomerse No. 1 (right) prevents curds.

Delicious dessert made without sugar

How would you like a recipe for this delicious, old-fashioned rice pudding? It's a sweet dish. And made without a grain of sugar! If you'd like the recipe . . . and nearly a score of others made with Monsanto Saccharin instead of sugar . . . get a copy of this booklet.

For your *free* copy of "*the sweetest story ever told,*" mail the coupon.

* * * * * * * *

*Reg. U.S. Pat. Off.

MONSANTO CHEMICAL COMPANY, 1703-C South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

MONSANTO
CHEMICALS AND PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

SEND INFORMATION:
- ☐ Plasticizer Technical Service.

SEND LITERATURE:
- ☐ Bulletin P-130.
- ☐ Intermediates catalog.
- ☐ Booklet, Santomerse No. 1.
- ☐ Booklet, "Sweetest Story Ever Told."

SEND SAMPLE:
- ☐ Santophen 45.

MONSANTO CHEMICAL COMPANY
1703-C South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, material indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

NATURAL RUBBER content of tires due for skid via new NPA order.

NPA Limits Rubber Uses

A surplus of natural rubber is practically at hand. For first time in history Malaya exports over million tons (1950).

But surplus or not, NPA sets up controls to assure U.S. stockpile of about half of current monthly imports.

Uses of natural rubber are restricted by new order. Rubber growers worry about future after stockpiling ends next year.

A surplus of natural rubber will be a reality in the near future. But in spite of this news, government authorities are doing some heavy worrying about the natural rubber situation. The main problem is how to tap this growing supply for purposes of stockpiling.

There's no doubt that plenty of natural rubber is available. Malaya exported 1,106,000 tons last year and exports for the few previous years were also quite heavy.

The U.S. market got about a third of the total shipment for 1950 . . . almost 380,000 tons. The United Kingdom was the next biggest customer with almost 200,000 tons. Russians and communist China received a little over 13 percent.

NPA enters: In spite of this generally cheerful situation the NPA is hard at work limiting the amount of our 75,000 ton monthly imports of natural rubber that can be used by industry and not go into the stockpile. In an order that went into effect on March 15th the NPA restricted civilian consumption of natural rubber and latex to about 30,000 tons a month. In February, industry used about 35,000 tons.

The new rubber order, which is considered to be the final directive on rubber for the time being, specifies by item the percentage of natural rubber which may be used in civilian and some military products. There are about 40,000 items in the 32 page listing.

Under the order, passenger tires will contain from 12 to 22 percent natural rubber (depending on size) instead of the present 25 to 35 percent. No natural rubber may be used in toys, tire tubes, bottle stoppers and auto tire retreading materials. Specific quantities of rubber are enumerated for a long list of other rubber sundries.

Other attempts at limiting the immediate use of natural rubber include a rubber simplification order which went into effect on February 19th. This order actually set up some controls on both natural and synthetic rubber. Its effects will result in one-type, one color and possibly one size models of many rubber products and the introduction of "austerity" designs in many products using rubber. The order will also mean that conveyor and other types of industrial belts will be available in black only. And electric insulation may be natural or black color only.

Growers' worry: But rubber growers are looking ahead as to what may happen in 1952 when the stockpile goal is reached. This will be a big question before many rubber producers' meetings this year. In the frantic stockpiling by the U.S., Australia and the iron curtain countries, the rubber growers see only trouble.

Specifically, they claim there are two real dangers: (1) a surplus in the producing countries when demand is met and when synthetic production in the U.S. is more established than during World War II, and (2) the danger that the U.S. stockpile, or substantial parts of it, may be disposed of without regard to international rubber agreements.

A solution: Rubber growers claim that the most practical solution to this potentially dangerous situation is to establish an international allocation system among the producer and consumer nations and allocate rubber from producing areas "in accord with an historical pattern."

The producers say that it would have to be an agreement which included at least the following producing countries: Malaya, French Indo-China, Thailand and Liberia. Otherwise, they claim, the non-signatory countries, though falling into the unenviable status of non-cooperators, would nevertheless cash in on their "black market" situation.

Old question: Some time in 1952, on completion of the U.S. stockpile, there should be about 500,000 tons of natural rubber available for added consumption and stockpile rotation in the U.S. And rubber growers predict that the producing countries will face a big problem if the U.S. does not act speedily in 1952 to lift consumption barriers. By this they also seem to mean the unrestricted use of natural rubber and the shutdown of competing synthetic rubber plants. But is doubtful whether the Congress or the public would ever permit anything except a minor slowdown in the synthetic rubber program in these uncertain times.

There is one thing that industry and

The Defense Production Problem

To win out in the struggle for freedom into which the Russian Communists have plunged us we must do at least four things. We must:

1. Speedily carry through a program of defense production which, at its peak, is scheduled to take about one-fifth of our national output.

2. Pay for this program as we go, by methods that will enable us to maintain the effort for an indefinite period – as long as may be necessary to insure peace and security.

3. Manage intelligently and endure intelligently a set of direct government controls which, in certain critical departments, will put our national economy for a time in a hateful straight jacket.

4. See that these emergency controls are not fastened upon us permanently thereby presenting to our Soviet antagonists a major victory for collectivism on our home front.

This is the first of a series of editorials designed to present in the simplest terms these key aspects of our struggle to preserve our free institutions.

A Staggering Task

The magnitude of the defense production job staggers the imagination. Over the next year it calls for a larger volume of goods and services than the 20 million people of the states of New York and New Jersey will use for all purposes. The (London) TIMES has observed that, taken alone, the increase of defense expenditures which has been budgeted for the federal government's coming fiscal year (about $30 billion) "is in itself not far short of the total national income of the United Kingdom."

Yet so powerful is the production machine created by free American enterprise that, at the scheduled peak, the defense program will take only about one-fifth of our total national output. The exact form and dimensions of the program will, of course, be hammered out on the anvil of public and congressional debate. But the President's recent estimate of an annual rate of expenditure of $45-55 billion for defense by the end of this year may well turn out to be somewhere near right.

To meet even these vast requirements of defense production we are in better shape technically than we were when we started to prepare for World War II. Our industrial plant and equipment is greatly improved. Over $65 billion has been invested in it since V-J Day. Our working force is about eight million larger than it was ten years ago and much better trained.

The difficulty, and it is a very serious economic difficulty, is that we must fit the defense program into a productive machine that has been almost fully extended to meet the needs of a booming civilian demand. The present plan is to step up defense production during 1951 from about 7% to about 18% of our total national output. Because there is relatively little slack in our economy, this means that civilian production at the outset must

be cut back as defense production is stepped up.

The cut-back of civilian goods must be especially severe in the case of products made of metal. This is particularly true of goods that use scarce strategic metals such as aluminum and copper. Of our total defense production program, about half will go for "military hardware" – airplanes, guns, munitions, tanks and the machinery to make them. By the end of 1951 defense requirements are scheduled to absorb most of the metalworking production not required for essential construction and for the spare parts necessary to keep existing equipment running. For a time at least, there will be a sharp cut in the supply of new metal products available to civilian consumers. The defense squeeze on both materials and manpower will also cut sharply into housing and other civilian construction.

For the Short Run — Controls

In the short run there is no answer to the problem of meeting defense production schedules except controls. Sharp reduction of non-defense expenditures by government is essential and would help greatly. But the basic fact is that we cannot increase our total production fast enough to meet immediately both civilian and defense requirements.

Controls are needed, therefore, to switch resources from civilian to defense production, and at the same time prevent the combined demand for critical products from sending prices right through the roof. In the case of many scarce strategic metals such as nickel, copper and cobalt, the task of increasing output is especially difficult because our limited supplies are tucked away deep in the earth in many quarters of the globe.

For the longer pull – and that is what we must face – there is another answer to our defense production problem that is infinitely better than controls. And this time, in contrast to World War II, it is all-important that we get the right answer to our defense production problem for the longer pull and that we get it right now. In World War II we geared our economy to meet the requirements of a relatively short and decisive conflict. Now our leaders, however they may differ as to methods, are well agreed that, at best, "the conditions under which we labor may persist for ten, fifteen or twenty years." That is General Bradley's phrase.

For the Long Pull — More and Better Production

For this longer pull, the constructive answer to our problem of defense production is clearly more and more efficient production all along the line. It is true that overall we now have the most efficient industrial establishment in the world. But, even so, much of it is far short of attainable efficiency. Some plants using up-to-date equipment and methods are as much as six times more efficient than others in the same industry that are lagging in modernization.

Our Director of Mobilization, Charles E. Wilson, has clearly in mind this problem of increasing our industrial efficiency. The first step in his job, as he conceives it, is to get out an adequate supply of weapons to equip the army, navy, and air forces already mobilized or in process of organization by us and our allies. The second step is to make sure of our capacity to produce both "military hardware" to meet any increased requirements and the maximum possible volume of goods for civilian use.

In concentrating on more and more efficient production, Mr. Wilson is squarely on the beam. We can attain his objective – by sustained effort on the part of each one of us backed by up-to-date industrial methods and equipment.

If we do that, we can maintain indefinitely an adequate defense effort and at the same time enjoy a standard of living higher than any other in the world.

Additional production and more efficient production are our surest safeguards against our two most menacing enemies on the home front – the deadly inflation that can destroy our free economy, and the strangling government controls that can destroy our political freedom.

McGraw-Hill Publishing Company, Inc.

the public know for a certainty . . . the producing countries cannot guarantee that the U.S. will get a certain quality of natural rubber in 1953, 1954 or later. A communist swoop across southeast Asia might even make it impossible for the growers to live up to their 1952 commitments.

Expansion

Norton Co.: Construction on a new unit at the Chippewa plant will begin in a few weeks. The unit, which will cost about $1 million dollars, will be in production by Jan., 1952, will up output of fused aluminum oxide by 25%.

The company's expansion program at its Cap-de-la-Madeleine plant (in Quebec) has been completed at a cost of $2.5 million. The addition there is expected to increase Norton production of silicon carbide abrasives by approximately 50%.

•

Bata Petroleum: The company has received the first permit for exploitation and development of potash deposits in Canada. The permit covers deposits in the Unity district, 100 miles west of Saskatoon.

The potash resources there are the only known potential resources in Canada. The big drawback to the deposits is that they are too deep for shaft mining. Bata will spend $235,000 in the next three years, hopes to discover an economic method of brine mining.

•

Army QM: The new quartermaster laboratory will be built near Natick, Mass. Lab will be center of research and development on chemicals, plastics, and military clothing. Estimated cost of project: $11 million.

•

Spencer Chemical: New facilities at the Jayhawk Works (near Pittsburg, Kansas) will substantially increase company's output of anhydrous ammonia and nitric acid. The expansion program, which will be completed by the end of the year, will mean that ammonia production has been doubled since June 1946. In the same time, output of nitric acid will have been boosted 67%.

•

Merck: An extensive research program that may lead to expenditure of between $3 and $4 million for the manufacture of additional products is being laid out by Merck & Co. Study will be of new operations in San Francisco, where Merck acquired Magnesium Products.

CUTTER LABS: Painted lines okay for pedestrians.

Lines That Lead

Cutter Laboratories, manufacturer of pharmaceuticals and biologicals at Berkley, Calif., is now considering an extension of its simple but effective device for guiding visitors through the plant . . . . painted lines on the walks.

At present two lines, one red and one green, guide callers through the number of scattered buildings that comprise the plant site. The green line leads to the administration building and the red to the employment and personnel building. But officials believe that plant expansion will soon call for the painting of one or more additional lines on the plant's trim walks to guide the course of visitors.

War idea: The "follow-the-stripe" idea originated at Cutter early in World War II. At that time some parts of the plant were "restricted" and employees could not be spared to usher visitors through the premises. Stripes seemed to offer an answer since most visitors had business in either the employment or the administration building. The administration building houses the reception desk, company executives, general finance and sales offices and the production administration offices.

All the gateman had to do was ascertain the nature of the caller's business and then put on the right track (line). Strangers straying from the lines were easily spotted and the whole cause of plant security was thereby aided.

Stripes for security: To a great extent security considerations again are what may compel the Cutter management to increase their network of stripes. A building adjoining the plant site was recently acquired to house the newly established industrial engineering offices of the company. At present it may be entered from a side street. But if security restrictions require, the entrance may be closed and another stripe slapped down through the plant to bring in visitors funneled through the main gate.

With one exception the stripe system has proved 100 percent effective. That exception occurred about a year ago when a caller drove into the main gate and received the word to follow the green stripe. Instead of parking, however, the visitors proceeded to drive along the line until he found himself jammed between two buildings and realized that walking was the correct procedure.

Zinc Dust Help

To forestall excessive conversion of scrap into slab zinc at the expense of the zinc dust supply, NPA has issued an order (M-37) limiting zinc scrap inventories and regulating scrap "toll" agreements.

A toll agreement is an arrangement whereby the owner of scrap material enters into an agreement to have his scrap converted and retains title to it after the process is completed.

The new order prohibits delivery or acceptance of zinc scrap for converting, remelting or making other ar-

8 HYDROXY QUINOLINE BASE
and derivatives
•
PARA AMINO BENZOIC ACID

Manufactured by
GAMMA CHEMICAL CORP.,
Great Meadows, N. J.

Fisher
CHEMICAL COMPANY, Inc.
Sole Sales Agents
60 E. 42nd STREET, NEW YORK 17, N. Y.
MUrray Hill 2-2587-8-9
Cable Address: PHARCHEM

Send For This Valuable Mailing List Data!

To aid you in planning your direct mail, check any of these mailing lists you may be interested in . . .

- ☐ Business Executives
- ☐ Electrical Appliance Dealers
- ☐ Manufacturing Industries
- ☐ Metal-Working Industries
- ☐ Aviation Industries
- ☐ Bus Industry
- ☐ Chemical Processing Industries
- ☐ Civil Engineering and Construction Industries
- ☐ Coal Mining Industries
- ☐ Electrical Industries
- ☐ Electronic Engineers
- ☐ Food Industries
- ☐ Metal Mining Industries
- ☐ Power Plant Engineers
- ☐ Product Design Engineers
- ☐ Textile Industries
- ☐ Welding Industry

. . . attach this 'ad' to your business letterhead . . . and mail. We'll send you complete information, selections, list counts, and prices. No obligation, of course.

Direct Mail Division

McGRAW-HILL Publishing Company

330 W. 42nd St., New York 18

rangements whereby the owner would retain title after the processing, unless authority to do so is obtained from the National Production Authority.

The order also makes it illegal for a scrap yard to buy zinc scrap to a point that it would have more than one-third more on hand than it had last year.

Under the order galvanizers' dross cannot be used for any other purpose except zinc dust, unless specific authority is obtained from NPA. The dross is the principal raw material used by zinc dust producers.

People

J. L. Dampier is a new vice president of Lever Brothers, in charge of detergent and shortening sales. Dampier, formerly marketing director of Lever Brothers, Ltd., Toronto, assumes his new duties March 15.

Dampier joined the company in 1936, spent 5 years in the Canadian Army during the war. Since his return from service, he has served as general sales manager, and sales director (with responsibility for all soap marketing activities).

Harry Hopkins, in charge of coating resin research for Plaskon Division (Libbey-Owens-Ford Glass Comp.), has been promoted to associate director of research.

Niagara Alkali Co.: William J. Weed, sales manager, and Louis E. Bauer, production manager, are now vice presidents. Weed has been a director since 1941; Bauer was made a director a few days before his election to vice president.

Frederick W. Tetzlaff, assistant sales manager for the plastics department of Rohm and Haas, will now be assistant to Lloyd W. Covert, production v. p.

Government Needs

The Federal Supply Service, GSA, 250 Hudson St., New York 13, N.Y.: 1,560 gal. of paint and non-flammable varnish remover (Invitation No. NY 2H-28438-until Mar. 21).

•

The Federal Supply Service, GSA, U.S. Court House, 219 So. Clark St., Chicago 4, Ill.: 1310 gal. floor wax, 5750 gal. water emulsion floor wax, and 100 cans paste floor wax (Invitation No. CH-28640–until Mar. 19).

•

The Federal Supply Service, GSA, 1114 Commerce St., Dallas, Tex.: 21,000 gal. of paint, ready-mixed; 1,850 gal. floor paint (rubber and varnish base); 5,100 gal. interior and exterior enamel; 15,346 lbs. linseed oil; 17,500 lbs. white lead in oil; and 5,280 lbs. linseed oil putty.

Bids will be received until Mar. 21 on Invitation No. FW-12403.

•

The Navy Purchasing Office, 111 East 16 St., New York City: 480,000 lbs. calcium carbide (Invitation No. 8456–until Mar. 23); 630,000 lbs. calcium chloride (Invitation No. 9495–until Mar. 23); 12,540 gal. tetrachloroethylene (Invitation No. 8514–until Mar. 29); 700 drums of chloroform (Invitation No. 8454–until Mar. 29); 48,000 lbs. hydrochloric acid (Invitation No. 8442–until Mar. 30); 1,520,000 lbs. absorbing compound (Invitation No. 8511–until Apr. 4); 33,500 gal. carbon tetrachloride deodorant blocks (Invitation No. 8499–until Apr. 4); 137,000 lbs. paradichlorobenzene (Invitation No. 8500 – until Apr. 5); 46,200 lbs. nitric acid (Invitation No. 8503–until Apr. 5).

•

The Aviation Supply Office, 700 Robbins Ave., Phila., Pa.: 161,000 gal. of various types of enamels (Invitation No. B-53993–until Mar. 19).

Gov't. Contract Awards

Montrose Chemical Co.: 120,000 lbs. of DDT, 100%–$64,320.

•

Octagon Process, Inc.: 17,632 gal. of glycerin–$177,659.

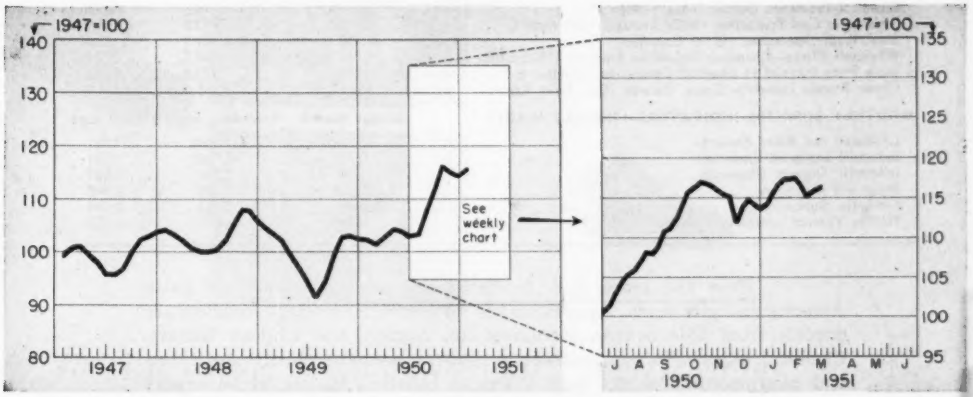
•

Western Associates, Inc.: 20,000 gal. trichloroethylene–$177,659.

•

Du Pont: 81,400 gal. of trichloroethylene–$115,566.

CHEMICAL MARKETS....



CHEMICAL INDUSTRIES OUTPUT INDEX—Basis: Total Man-Hours Worked in Selected Chemical Industries

Action taken by the General Services Administration this week in halting all purchase of tin for the government stockpile had the desired effect—and quickly, too. Within a few days the price tumbled from $1.83 to $1.39 a pound, with many producers ready to capitulate. GSA is expected to take over all tin import buying soon, as it has already done with natural rubber.

Activity in the resale market has boosted the price of muriatic acid in the metropolitan New York area to $130-150 a ton for the 20 Baume grade (tank wagons, delivered). In smaller lots, shortage of carboys is hitting the small industrial user especially hard.

Makers of arsenates will have a more prominent part in the agricultural drive for pest control. With imminent shortages of benzene hexachloride and toxaphene, calcium arsenate in particular will be needed for cotton boll weevil control; fortunately, production is up 20% over a year ago.

Following the Office of Price Administration's rollback in edible oil prices, declines of 1-2¢ a pound in tallow and grease were not long delayed; one soap producer in the Midwest voluntarily rescinded a pre-price control advance in order to protect jobber and dealer margins.

Look for petroleum producers to wage a vigorous fight in defense of the existing 27½% depletion allowance. The government, in quest of additional revenue, is asking a reduction to 15%. Producers claim the incentive for needed record production would be seriously impaired by putting this proposal into effect—and might mean a considerable boost in crude oil prices.

Main features of the fine chemical business this week: Extreme shortage in citric acid and aspirin; recurrent moderate scarcity of salicylic acid; but comparatively good supply of saccharin. Although manufacturers' and jobbers' ceilings have been imposed, no restriction has been placed on additional resale turnover which eventually compounds the price advances to stratospheric levels.

MARKET LETTER

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	117.5	116.5	103.3
Bituminous Coal Production (Daily Average, 1000 tons)	1853.0	1683.0	530.0
Steel Ingot Operations (% of Capacity)	100.1	101.0	85.6
Wholesale Prices—Chemicals and Allied Products (1926=100)	148.7	148.5	115.9
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	223.8	222.2	160.5
Chem. Process Industries Const. Awards (Eng. News-Record)	$29,808,000	$79,975,000	$1,715,000

MONTHLY BUSINESS INDICATORS—HOURLY WAGES	Latest Month	Preceding Month	Year Ago
Chemicals and Allied Products	$1.578	$1.559	$1.437
Industrial Inorganic Chemicals	1.745	1.736	1.593
Industrial Organic Chemicals	1.691	1.681	1.561
Drugs and Medicines	1.518	1.496	1.409
Synthetic Rubber	1.856	1.858	1.694
Plastics (except synthetic rubber)	1.664	1.633	1.505

More and more, U.S. foreign trade depends heavily on Latin America and vice versa. Approximately 40% of U.S. strategic imports are coming from this source, including tin, copper, and Chilean nitrate. Chemical exports to our southern neighbors comprise chiefly medicinals and pharmaceuticals, and such items as caustic soda on which export licensing is not restrictive.

Shortages of soda ash, chlorine and liquid caustic soda can be attributed in part, at least, to the inadequate number of boxcars and tankcars. A similar situation obtains for drums and smaller metal containers. Manufacturers and jobbers have resorted to various incentives to insure return of drums; the 55 gallon size is now subject, in many cases, to a $10 returnable deposit.

At this time of the year, naval stores are normally scarce because the new seasonal production has not become available. The curb on exports now in effect protects the supply from serious shortage, although the recent restrictions on French naval store exports has partially offset this improvement.

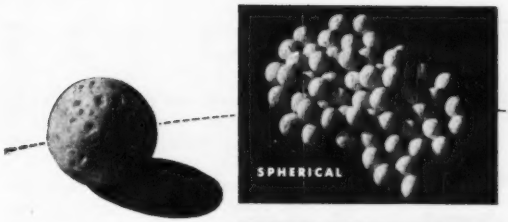
Spot news of the market this week: Paradichlorobenzene is selling around 23¢ a pound; flake caustic soda is moving into domestic and export channels at 10-11¢ a pound in carload lots, with demand sustained at these levels; a price advance in formic acid is due around the first part of April.

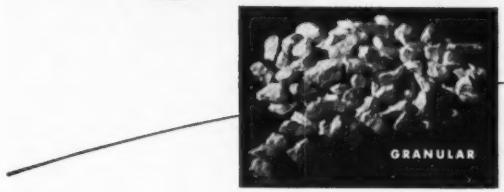
Typical of U.S. needs for more raw materials, fats and oil imports were up in 1950 over the previous year, while exports tapered off. Castor oil imports quadrupled, with substantial advances for tung and coconut oils. Only palm oil showed a decline among the majors in this category.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 12, 1951

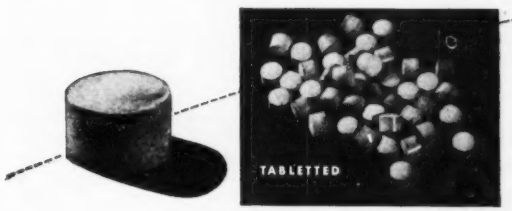
	Change	New Price		Change	New Price
UP					
Cocoa Butter	$ .01	$ .805	Oiticica Oil, tankcars	$ .01	$ .33
Cresylic Acid, imported/gallon	.05	1.40	Peanut Oil, refined	.015	.305
Egg Albumen, flake	.09	1.95	Soybean Oil, alkali refined, tanks	.005	.235
Glycerine, crude, soap-lye	.02	.43	Thyme Oil, white cns.	.25	2.75
Naphthalene, crude, imported	.0015	.069			
DOWN					
Carnauba Wax, No. 1 Yellow	.04	1.30	Menthol, natural, USP	.40	13.15
Casein, imported, acid-ppt. (over 5 tons)	.015	.40	Ouricury Wax, refined	.07	1.11
Eucalyptus Oil, 80-85%, drums	.05	1.45	Sheliac, refined, bags	.01	.68
Grease, white	.02	.145	Tallow, fancy	.015	.16
Lemongrass Oil, drums	.50	4.75	Tin metal	.44	1.39

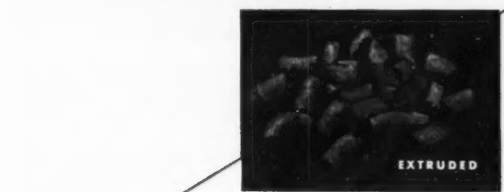
All prices per lb. unless quantity is stated





preformed catalysts made to your specifications





by **HARSHAW**

HARSHAW

MORE THAN 12 YEARS AGO

In 1938, Harshaw first began the manufacture of catalysts *to customers' specifications.* From a few catalysts for a few processes in 1938, Harshaw has continuously magnified its efforts until at the present time we manufacture, to specification, *dozens* of catalysts for many different important manufacturing processes. We have solved many individual catalyst problems, and are ready to apply our depth of experience and large production facilities to any catalyst development problem which may be presented to us.

The majority of Harshaw catalysts have been manufactured to customers' specifications on a confidential basis. Production facilities for spherical, granular, tabletted, extruded or powdered catalysts have steadily expanded, as research and experience have teamed to successfully assist in the development of many catalysts to meet special production requirements. We are ready to help you, too, solve your catalyst problem.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

PROFESSIONAL SERVICES

Consulting • Designing • Marketing • Testing • Analysing

Developing • Evaluating • Inspecting • Research

LEBERCO LABORATORIES
Hormone Assays • Drug Assays
Pharmaceutical and Cosmetic Research
Sterility Tests • Toxicity Studies
Send for information concerning our services
125 HAWTHORNE ST., ROSELLE PARK, N. J.

Sponsored Industrial Research
Bjorksten Research Laboratories
323 W. Gorham St., Madison 3, Wis.
13791 S. Avenue "O", Chicago 33, Ill.
50 East 41st St., New York 17, N. Y.

ROGER WILLIAMS, INC.
• ENGINEERING ECONOMICS
• MARKET RESEARCH
• TECHNICAL WRITING
• TECHNICAL BOOKLETS
Write for "Profit Evolution"
148 East 38th Street, New York City 16
Murray Hill 5-8508

COLBURN LABORATORIES, INC.
Research Chemists
• New Product Development
• Organic Synthesis and Research
• Non-routine Analytical Work
723 S. Federal St. Chicago 5, Ill.

CHEMICAL CONSULTATION, RESEARCH and DEVELOPMENT
• Sponsored Industrial Research • Product & Process Development • Chlorination Processes • Chemotherapeutics • Custom Organic Syntheses • Microanalyses
THE PANRAY CORP.
Research Division 340 Canal St., N. Y. 13

NEED ASSISTANCE

in a hurry?

When you need technical services —and need them fast—call on the men listed on this page. You'll find them ready to offer you assistance of the highest calibre.

CONSULTING
Rubber Technologist
Natural and Synthetic Rubber
R. R. OLIN LABORATORIES
Complete Rubber Testing Facilities
Established 1927
P. O. Box 372, Akron 9, Ohio
Telephone HE 3724, FR 8551

CLARK MICROANALYTICAL LABORATORY
CH, N, S, Hal., Alkoxyl, Alkimide, Acetyl, Terminal Methyl, etc. Complete and competent service by specialists in organic micro-chemical analysis.
Howard S. Clark, Director
104½ W. Main St. Urbana, Ill.

EXPERIMENTAL PHYSICS RESEARCH
Photochemistry, Chemical Kinetics, Reaction Rate Studies, Vapor Pressure of Low Pressure Substances, Structure of Solids and Adsorption Studies.
THE ANDERSON PHYSICAL LABORATORY
CHAMPAIGN, ILLINOIS

—R. S. ARIES—
AND ASSOCIATES
Chemical Engineers & Economists
Process Analysis • Surveys — Technical & Economic • Market Research • Product Development • Evaluations • Application Research.
460 Madison Ave. N. Y. 17, N. Y. ELdorado 5-1430

BOOKS

Amino Acids and Proteins, edited by David M. Greenberg. Charles C. Thomas, Springfield, Ill.; ix+950 pp., $15.

Foremost authorities in their special fields review the developments in the biochemistry of amino acids and proteins in relation to biology and medicine. Following up the methods and results of protein research, the book covers their chemical composition and structure, methods of isolation, methods for analysis of their component units and products and evaluates the functions and properties of biologically important proteins and protein derivatives. Individual chapters deal with the chemical characteristics of amino acids plus a discussion of the chemical methods used in the organic synthesis of amino acids and peptides.

Certain proteins are discussed specifically in the light of their role in special medical problems. Other medically important topics include sections on the significance of ACTH, insulin and the growth of hormone and the most recent advances in immunology. Multiple tables give information on the chemical properties of amino acids, the molecular weights of proteins and the biological aspects of amino acids and proteins.

Laboratory Design, edited by H. S. Coleman. Reinhold Publishing Corp., New York, N. Y.; ix+393 pp., $12.

Drawing on the experience and knowledge of leading specialists, including laboratory administrators, building scientists, and architects, this large volume provides a reference source of constructional information on laboratories both for research and educational institutions and for industries. This study was prepared by the National Research Council's Committee on the Design, Construction and Equipment of Laboratories.

The report comprises four major parts with the first section being devoted to a general discussion of interior construction materials, furniture, plumbing, light and power, ventilation and safety measures. The following two sections deal with the problems of design involved in the construction of teaching and industrial laboratory buildings, from site selection to interior arrangement, along with a consideration of special features in laboratories set up for specific purposes. The final section contains descriptions of various types of completed, functioning labora-

tories, with plans, sections, diagrams and photographs of each.

Principles of Phase Equilibria, by F. E. W. Wetmore and D. J. LeRoy, McGraw-Hill Book Co., New York, N. Y.; x+200 pp., $3.50.

Basic principles of heterogeneous equilibria in terms of laboratory criteria are presented in this text by means of a rigorous system of development from fundamental precepts through simple examples to more complex cases. Use of this presentation permits both the student and advanced reader to utilize an understanding of the principles and their practical applications in his methods of dealing with any system.

Systems of one, two, three, and four components are covered with each case exemplifying the terminology and method of treatment by the detailed consideration of a typical system, followed by a review of a wide variety of systems. The material is arranged to show the similarity in the behavior of gaseous, liquid, and solid solutions, thereby bringing out the comprehensive nature of the phase rule. Concepts are discussed from the standpoint of chemical thermodynamics but without the use of thermodynamic symbolism. Exercises are included at the end of each chapter.

Briefly Listed

CHEMICAL ENGINEERING COST ESTIMATION, by Robert D. Aries and Robert D. Newton presents a correlation of the published data on equipment costs, and gives at least indicative figures for many of the other elements of economic appraisal such as service costs, maintenance costs, overheads, and selling expenses. Published by Chemonomics, Inc., 400 Madison Ave., New York 17, N. Y., for the price of $5.

REPORT ON THE BUSINESS NEWS, new National Defense Edition published every two weeks furnishing business information on government controls in addition to reporting on conditions directly affecting prices, inventories, markets and materials. Every 90 days, a "Handbook of Emergency Controls" is to be issued containing a summary of priority and price data for permanent reference. Both published by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y., at the rate of $3. a month.

1950 SUPPLEMENT TO THE METAL CLEANING BIBLIOGRAPHICAL ABSTRACTS prepared by Jay C. Harris, chairman of the ASTM committee on Soaps and other Detergents; 32 p. supplement contains 170 bibliographical abstracts including 89 additional references for 1932 to 1948 and 81 new references 1949 and 1950. Available from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. at $1. per copy; together Bibliography and Supplement are $3.

MARKET PLACE

LOCAL STOCKS • CHEMICALS • RAW MATERIALS
EQUIPMENT • SUPPLIES

FOR PROMPT SERVICE IN THE NEW YORK AREA
SOLVENTS—ALCOHOLS EXTENDERS
CHEMICAL SOLVENTS
INCORPORATED
60 PARK PLACE NEWARK 2, N. J.
WOrth 2-7763 - MArket 2-3650

ALAN A. CLAFLIN
Manufacturers' Agent
DYESTUFFS and CHEMICALS
Specializing in
BENTONITE
and
TALC
2 Storer Street Boston 10, Mass.
TELEPHONE Liberty 5944-5945

this market place

is where you will find additional products—services—equipment. They are designed to help you speed production, improve operations, or lower costs.

Check this section each week.

SAUEREISEN
ACID PROOF CEMENTS

Let us help you with your acid-proofing problems
Send sketches and blueprints. Write for catalog.
Sauereisen Cements Co. · Pittsburgh 15, Pa.

J.U. STARKWEATHER CO.
INCORPORATED
241 Allens Avenue
Providence, R. I.
INDUSTRIAL CHEMICALS
TEXTILE SPECIALTIES

GEORGE **MANN** & CO., INC.
Industrial Chemicals
GEORGE MANN & CO., INC.
Fox Point Blvd., Providence 3, R. I.
Phone GAspee 8466 · Teletype Prov. 73
Branch Office and Plant
Stoneham 80, Mass. · Phone WInchester 2910

How to
- organize
- operate
- and supervise the small plant

HERE are the best, profit-building ideas of scientific management, made practical especially for the small plant. This authoritative book brings you the advanced management techniques that will help secure a maximum of production at a minimum cost per unit. Treats every significant management topic, from the principles of scientific management to the considerations in financial planning —from the laws to be considered in production to sales tools, and their use — from obtaining employee morale, to the know-how rules of machine planning.

Prepared under the auspices of the Management Division
ASME

Just Published!

SMALL PLANT MANAGEMENT

Edited by
Dr. EDWARD H. HEMPEL, Chairman,
Small Plant Committee, ASME
Prepared Under the Auspices of the
Management Division of the
American Society of Mechanical Engineers
499 pages, 45 illustrations, $6.00

GIVES sound advice and tested methods on such varied topics as how to rate products; choose the legal form of organization; how to select a process; evaluate jobs; control manufacturing expenses; how management and unions can work together. Completely covers the most advanced practices in small plant management.

Topics like these fully explain know-how management

- process selection and planning
- creating the external organization
- purchasing
- laws and the small plant
- buying, adapting, and making machines and facilities
- the tasks of sales management
- where to locate the small plant
- planning the small plant premises
- what to consider in financial planning

"Has a value beyond that which its title indicates, and should be a part of the library of everyone interested in management."
—Mechanical Engineering

SEE THIS BOOK 10 DAYS FREE

McGraw-Hill Book Co., Inc.
330 West 42nd St., NYC 18, N. Y.

Send me the A.S.M.E.'s SMALL PLANT MANAGEMENT for 10 days examination on approval. In 10 days I will remit $6.00 plus few cents for delivery, or return the book. (We pay for delivery if you remit with this coupon; same return privilege.)

Name .....
Address .....
City ..... Zone ... State .....
Company .....
Position FCN-3-17-51
This offer applies to U. S. only.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: "OPPORTUNITIES" EQUIPMENT USED OR RESALE

RATES

UNDISPLAYED

$1.20 a line. Minimum 4 lines. To figure advance payment count 5 average words as a line.
Employment Wanted & Individual Selling Opportunity undisplayed advertising rate is one-half of above rate, payable in advance.
Box Numbers—Care of publication count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Equipment Wanted or For Sale Advertisements Acceptable only in Displayed Style.

DISPLAYED

Individual Spaces with border rules for prominent display of advertisements.
The advertising rate is $8.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches to a page.
New Advertisements received by March 21st at the New York office, 330 W. 42nd St., N. Y. 18, will appear in March 31st issue subject to space limitations.

FMC EQUIPMENT HEADLINERS

Selected from our Latest Bulletin

24 Pebble and Ball Mills. Send for Special List.

15 SHRIVER—Sperry Filter Presses—all types.

34 NEW STAINLESS Kettle in New York Stock.

8 Dry Ribbon Mixers in N. Y. Stock; All Sizes.

Complete Plants for many purposes

Send Us Your List of Surplus Equipment

FIRST MACHINERY CORP.
157 Hudson Street,
New York 13, N. Y.

"CONSOLIDATED"

BUYS—SELLS
USED MACHINERY
AND EQUIPMENT
FOR THE CHEMICAL
AND PROCESS INDUSTRIES

Including Paint, Food, Rubber, Plastics, Sugar, Drugs, Cosmetics and Allied Fields. From a single item to a complete plant.

CASH FOR YOUR IDLE EQUIPMENT.

CONSOLIDATED
PRODUCTS COMPANY, INC.
14-18 Park Row, New York 38, N. Y.
BArclay 7-0600

FOR SALE

4 Selectro Vibrating Screens, 2'x7', two deck, enclosed, stainless steel.
1 Hardinge Conical Ball Mill, steel liner, 4'6" dia. x 24".
13 Stainless Steel Tanks, Type 316, closed, 50 gal., 80 gal., 325 gal., 425 gal.
1 Rotary Vacuum Filter 8' x 8' Acid Proof, Rubber & Lead.

PERRY EQUIPMENT CORP.
1521 W. Thompson St.
Phila. 21, Penna.

"Geared to Serve You"
Swenson triple effect evaporator—calandria type.
Tyler-Hummer, 3' x 10' type 3S Vibrator.
Bird 18" x 28" continuous filter—V. B.

JASPER MACHINERY CO. INC.
1123 BROADWAY 10, NEW YORK
CHelsea 3-9010 9011

FOR SALE
Two (2) Sharples
SUPER D CANTERS
(Type PN 14) Fully Fitted with all S/S Contact Parts and 10 HP Motors, Tools and Spare Parts. These machines are in original shipping cases.
Contact: Mr. L. R. Farnum
R. P. Scherer Corp. Detroit 13, Mich.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

EMPLOYMENT SERVICE

SALARIED POSITIONS. $3,600 to $30,000. This confidential service for outstanding men who desire a new connection, will develop and conduct preliminary negotiations without risk to present position. Send name and address for details. Tomsett Associates, 1206 Berger Bldg., Pittsburgh 19, Pa.

POSITION WANTED

TECHNICAL DIRECTOR—plastics, textiles, resins, adhesives, coatings, latices, plasticizers. Ph.D., 36; well-rounded background. Can invest. PW 9163, Chemical Industries.

WANTED

Wanted: Titanium Dioxide Pigments (any grade) needed to carry on our business. Will pay any reasonable premium or trade for other critical chemicals. Samuel Smidt Chemical Co., 410 Frelinghuysen Ave., Newark, N. J.

ANYTHING within reason that is wanted in the field served by Chemical Industries Week can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

UNUSUAL OPPORTUNITIES
can be found each week
in the
SEARCHLIGHT SECTION

READER SERVICE . . . . . .

HOW TO USE COUPON

For additional information on editorial items or products advertised, fill out coupon by circling number. Requests will be forwarded to the proper company; answers will be sent directly to the reader.

There is a page number on the coupon for each advertisement. Letters following the number locate the ad on the page (L-left, R-right, T-top, B-bottom). Small letters following the number indicate additional products in the ad.

For editorial items, the ABC's distinguish among several items on a page.

NEW PRODUCTS

Aluminum phosphates 17C
2,3-Butylene glycol 17B
Carboxymethylmercaptosuccinic acid 17D
Trifluorobromomethane 17A

NEW EQUIPMENT

Chart Recorder 22B
Conductivity Bridge 22D
Gyratory Sifter 22A
Leak Detector 21B
Roll Temperature Recorder 21A
Rubber-Lined Valve 22C
Slow-Speed Enclosed Motor 22E
Three-Roll Press 19A

TECHNICAL LITERATURE

CHEMICALS

Deionization for Silica Removal .. 52C
Fine Chemicals 52B
Organic Solvents 52A

EQUIPMENT

Dust Control Filter 52P
Hypochlorinator 52M
Industrial Controls 52D
Integral Fintubes 52L
Laboratory Crushers 52G
Lime Hydrators 52I
Magnetic Hump 52N
Metal Bellows 52E
Process Machinery 52O
Steel Fabrication 52J
Thermometers 52H
Valve Sizing Chart 52F
Welding Fittings and Flanges 52K

GENERAL

Biographical Booklet 52R
Institute of Inventive Research 52Q

PRODUCTS ADVERTISED

For more data, circle number on coupon

Chemicals
- Acetone 13c
- Adhesives R1b
- Alkalies, anhydrous sodium metasilicate B34
- Aluminum, 50% solution, technical 53d
- Ammonium oxalate, granular and purified 53b
- Ammonium sulphate, purified 53c
- Animal oils T34a
- Aromatic R3
- Bacteria control, santophen, sodium trichlorophenate 38-39d
- Calcium nitrate 18a
- Calcium ricinoleate 54c
- Carbon disulphide 18f
- Catalog, intermediates 38-39f
- Catalysts
  - Dupersol DDM, for polyester resins T33
  - Extruded 47d
  - Granular 47b
  - Spherical 47a
  - Tabletted 47c
  - Toluenesulfonic acid 38-39c
- Copper oleate 54d
- Cupric nitrate, purified & crystal 53a
- Detergents
  - Sulframin AB-40 flakes 32a
  - Sulframin AB-40 powder 32b
  - Sulframin E liquid 32c
  - Sulframin spray beads 32d
- Emulsifiers, resin size 24-25b
- Ethylene oxide 4
- Fatty acids T34c
- For electronic uses 16b
- Formaldehyde 13b
- Heat-transfer medium, aroclor, chlorinated biphenyl, bulletin P-130 ..... 38-39e
- 8 Hydroxy Quinoline base TL44a
- Inorganic 16a
- Isatin 29a
- Isopropenyl acetate 29b
- Kerasine 29c
- Laurone 29d
- Lead acetate 18d
- Lead peroxide 18e
- Lead stearate 54a
- Lithium compounds B33a
- Lithium hydroxysterate 54b
- Magnesium carbonate 18c
- Magnesium oxide 18b
- Methanol 13d
- Metallic soaps 16c
- Muriate & sulphate of potash .. B33b
- Organic 13a
- Para amino benzoic acid TL44b
- Pentalene 95 26
- Phosphorus & phosphorus compounds T31a
- Photographic 16d
- Plasticizers
  - Circular 105 37
  - Phosphate 38-39b
  - Phthalate 38-39a
- Pyrolidine 28
- Resin emulsions R1a
- Resins, piccolyte 22
- Saccharin, booklet
  - Sweetest story ever told 38-39h
- Sebacic acid as plasticizer L2
- Soda ash I
- Sodium & potassium compounds T31b
- Stearic acid, particle size 30
- Synthetic, bulletin C-9-103 21
- Vegetable oils T34b
- Versenes 24-25c
- Wetting agent & detergent, anionic santomerse #1 (booklet) 40% active allyl aryl sulphonate 38-39g
- Containers
  - Bags, multi-wall 17
  - Drum, fibre
    - Lever-locking 8a
    - Metal top & bottom 8c
    - Rigid 8b
    - Shipment of rolled materials 8d
- Dehumidifiers, hygrol, liquid, absorbent 23
- Meters, viscometer, highshear, paper making 24-25a
- Plant facilities, available in Louisiana B31
- Pumps, impervious graphite, corrosion resistant 20
- Research laboratories, industrial consultant 19

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT
Positions Wanted 50
Employment Services 50
EQUIPMENT
(Used or Surplus New)
For Sale 50
WANTED
Equipment 50

ADVERTISERS INDEX

Consolidated Products Co., Inc. 50
First Machinery Corp. 50
Perry Equipment Corp. 50
Jasper Machinery Co. 50
Sherer Corp., R. P. 50

READER SERVICE COUPON

Mail to Chemical Industries Week, 330 W. 42nd St., N. Y. 18, N. Y.

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

CITY & STATE _____

Editorial Items

17A	17D	21B	22C	52A	52D	52G	52J	52M	52P
17B	19A	22A	22D	52B	52E	52H	52K	52N	52Q
17C	21A	22B	22E	52C	52F	52 I	52L	52O	52R

Advertisements

I	8b	16a	18c	22	29a	B31	B33b	38-39b	TL44a	53b
R1a	8c	16b	18d	23	29b	32a	T34a	38-39c	TL44b	53c
R1b	8d	16c	18e	24-25a	29c	32b	T34b	38-39d	47a	53d
L2	13a	16d	18f	24-25b	29d	32c	T34c	38-39e	47b	54a
R3	13b	17	19	24-25c	30	32d	B34	38-39f	47c	54b
4	13c	18a	20	26	T31a	T33	37	38-39g	47d	54c
8a	13d	18b	21	28	T31b	B33a	38-39a	38-39h	53a	54d

Expires June 17, 1951

BOOKLETS . . . . . .

Chemicals

Organic Solvents
64-p. handbook written specifically for non-technical personnel, explaining in lay language the properties of a wide variety of organic solvents in common use and the application of these properties. Included are non-technical definitions, comparison tables, and testing methods. Central Solvents & Chemicals Co.

Fine Chemicals
Price list containing new listings and price reductions of firm's line of special chemicals, Krishell Laboratories, Inc.

Deionization for Silica Removal
4-p. folder pointing out usefulness and recommended layout of ion exchange systems to provide water practically totally free from hardness, carbon dioxide and silica and suggesting typical uses of deionization in the process and power industries. Resinous Products Div., Rohm & Haas Co.

Equipment

Industrial Controls
60-p. catalog on industrial control devices and safeguards for temperature, flow pressure, liquid level and humidity presenting over 100 different models on non-indicating electric, electronic, and pneumatic controllers for improving operations in industrial process applications. Minneapolis-Honeywell Regulator Co.

Metal Bellows
16-p. illustrated booklet supplying design considerations, specifications and fittings of stainless steel and bronze bellows, specially suited for applications of control devices and instrumentation such as regulators, valves, steam traps, shaft seals, etc. Chicago Metal Hose Corp.

Valve Sizing Chart
Steam valve sizing chart covering the range from 1 to 1,000,000 lbs/hr. and a butterfly valve sizing chart covering the range of 15 to 10,000 gallons/min. Fischer & Porter Co.

Laboratory Crushers
Bulletin describing construction features, design, capacity and complete specifications of laboratory crushers for testing samples and small scale reduction with reference to special types for handling various materials. American Pulverizer Co.

Thermometers
Folder featuring 4½" mercury actuated dial thermometer with a case that can be rotated to any readable position; information on specifications, construction details and purchasing data is included. Palmer Thermometers, Inc.

Lime Hydrators
8-p. bulletin discussing the theory of lime hydration in addition to covering construction details, methods of operation, dimensions and capacities of continuous lime hydrators. The Hardinge Co., Inc.

Steel Fabrication
16-p. catalog providing data on steel and alloy plate fabrication and discussing the techniques and methods used in the fabrication of tanks and vessels for the petroleum and chemical processing industries. Corrosion data charts list resistance values of common metals to hundreds of chemicals. Nooter Corp.

Welding Fittings and Flanges
Dimensional data card with one side showing the wall thickness and essential dimensions for all types of fittings; the other side furnishes dimensions and bolting data for all types of flanges, in all weights. Taylor Forge & Pipe Works.

Integral Fintubes
8-p. bulletin describing the construction of integral "one-piece" fintubes, illustrating the wide variety of heating and cooling applications in which they are used and containing engineering data and design curves. The Brown Fintube Co.

Hypochlorinator
Bulletin containing diagrams and explanation of operational details of firm's hypochlorinator, an automatic chemical feeder. Manzel.

Magnetic Hump
4-p. bulletin discussing non-electric magnetic hump, a unit designed to remove tramp iron from materials conveyed in pneumatic, gravity flow or liquid lines. Eriez Mfg. Co.

Process Machinery
Bulletin containing brief description of some of products manufactured and engineered by this firm—including agitator turbines, mixing kettles, ribbon blenders, flocculators, emulso-disperser, etc. Cleveland Mixer Co.

Dust Control Filter
8-p. bulletin describing the various models of aerodynamic filters, featuring a design based on the principle of particle separation through the force of aerodynamics. Aerodyne Development Corp.

General

Institute of Inventive Research
Bulletin lists inventions patented, developed or subjected to rigorous testing by the Institute's staff which has approved them for licensing to business firms in accordance with its standard practices. Institute of Inventive Research.

Biographical Booklet
Booklet is one of firm's "Famous Names in Chemical History" educational series; this one traces the life of Dr. Frederick Banting, co-developer of the insulin treatment for diabetes. Corning Glass Works.

ADVERTISER'S INDEX

American Polymer Corp. 1
American Potash & Chemical Corp. B33
Baker & Adamson Products, General Chemical Division, Allied Chemical & Dye Corp. . . . 3rd Cover
Baker Chemical Co., J. T. 18
Celanese Corporation Of America . . . 13
Chemical Solvents, Inc. 49
Claflin, Alan A. 49
Continental Can Co. 8
Cowles Chemical Co. B34
Delta Chemical Works 29
Dodge & Olcott, Inc. 3
Dow Corning Corp. 49
E. I. duPont de Nemours & Co., Inc. Electrochemicals Department, Field Research Section 28
Emery Ind., Inc. 30
Fisher Chemical Co., Inc. T44
Hardesty Chemical Co., Inc. 2
Harshaw Chemical Co., The 47
Hercules Powder Co. . . . . 24 & 25
Indoil Chemical Co. 37
Jefferson Chemical Co., Inc. 4
Koppers Company, Inc. 21
Lucidol Division, Novadel-Agene Corp. . . . T33
Mallinckrodt Chemical Works 16
Mann & Co., Inc., George 49
Mathieson Chemical Corp. . . . 2nd Cover
Monsanto Chemical Co. . . . . 38 & 39
National Carbon Division, Union Carbide & Carbon Corp. 20
Niagara Blower Co. 23
Oldbury Electro-Chemical Co. T31
Penn. Ind. Chem. Corp. 22
Raymond Bag Co. 17
Sauereisen Cements Co. 49
Sharples Chemicals, Inc. 26
Snell, Inc., Foster D. 19
Starkweather Co., Inc., J. U. 49
State of Louisiana Dept. of Commerce & Industry B31
Ultra Chemical Works, Inc. 32
Welch, Holme & Clark Co., Inc. . . . T34
Witco Chemical Co. . . . . Back Cover

BUSINESS STAFF

SALES MANAGER . . . . . By Sawyer
BUSINESS MANAGER . . . . . Albert E. Weis

Atlanta . . . . . Ralph C. Maultsby, 1311 Rhodes-Haverty Bldg., Atlanta 3, Ga.

Chicago . . . . . Alfred D. Becker, Jr., Frank C. Mahnke, Jr., 520 N. Michigan Ave., Chicago 11, Ill.

Cleveland . . . . . Vaughan K. Dissette, 1510 Hanna Bldg., Cleveland 15, Ohio

Dallas . . . . . Jos. H. Allen, First Natl. Bank Bldg., Dallas 1, Texas

Los Angeles . . . . . Carl W. Dysinger, H. L. Keeler, 1111 Wilshire Blvd., Los Angeles 17, Cal.

New York . . . . . Knox Armstrong, Robert S. Muller, Charles L. Todaro, 330 West 42 St., New York 18, N. Y.

Philadelphia . . . . . William B. Hannum, Jr., Architects Bldg., 17th & Sansom Sts., Philadelphia 3, Pa.

San Francisco . . . . . Ralph E. Dorland, John W. Otterson, 68 Post St., San Francisco 4, Calif.

Boston . . 1427 Statler Bldg., Boston 16

Detroit . . 2980 Penobscot Bldg., Detroit 26

Pittsburgh . . 738 Oliver Bldg., Pittsburgh 22

St. Louis . . 3615 Olive St., Continental Bldg., St. Louis 8

FOR SPORTSMEN ONLY···

Which of these hunting dogs can you identify?

1 Can be traced back to a pair of dogs which survived the sinking of an English brig off the Maryland coast in 1807.

2 Comparatively new to the American sporting scene, although used for hunting in Germany since the early 1800's.

3 A favorite hunting dog of royalty in England and Eastern Europe as far back as 1650.

4 One of the oldest breeds in history, originally used by the French as a hare dog.

See next column for answers.

FOR CHEMICAL USERS ONLY···

Which of these B&A Fine Chemicals fit your production needs?

★ CUPRIC NITRATE, Purified and Crystal, A.C.S.

This "B&A Quality" Chemical assays 99.5% minimum $Cu(NO_3)_2 \cdot 3H_2O$. Since it is low in insolubles, and controlled within close limits on neutrality, this purified material will be found suitable for most uses.

★ AMMONIUM OXALATE, Granular, Purified

Because it is particularly low in iron and other heavy metals, as well as of uniform crystal size, this B&A Fine Chemical has widely varied industrial applications and is specified by many users in preference to other materials.

★ AMMONIUM SULFATE, Purified

A white granular product assaying 99% minimum $(NH_4)_2SO_4$, it is particularly low in iron, lead, and arsenic. Not a coal tar derivative or a by-product material, but specially made by B&A as a basic process chemical from pure raw materials.

★ ALUMINUM CHLORIDE, 50% Solution, Technical

Notable for its clarity and for its particularly low iron content, this superior B&A Fine Chemical is available in special grades of 32° Baume strength, containing not less than 50.3% $AlCl_3 \cdot 6H_2O$.

Everyone who hunts with dogs will recognize these as: (1) Chesapeake Retriever, (2) Weimaraner, (3) Pointer, (4) Beagle.

Just as these hunting dogs are representative of the many breeds found throughout the country, the above products are typical of the diversity in "B&A Quality" Fine Chemicals. To meet the needs of today's chemical process industries, B&A offers a wide selection of fine chemicals. Many of them may be suitable for your requirements. For a new complete listing, write today for Booklet FC-3.

REAGENTS

B&A

STANDARD OF PURITY

FINE CHEMICALS

BAKER & ADAMSON *Fine Chemicals*

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

Offices: Albany • Atlanta • Baltimore* • Birmingham* • Boston • Bridgeport* • Buffalo* • Charlotte* • Chicago* • Cleveland* • Denver* • Detroit* • Houston* • Jacksonville* Los Angeles* • Minneapolis • New York* • Philadelphia* • Pittsburgh* • Providence* St. Louis* • San Francisco* • Seattle • Yakima (Wash.)

In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal* • Toronto* • Vancouver*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

* Complete stocks are carried here.

Can fused metallic soaps help you?

WITCO { **LEAD STEARATE**
LITHIUM HYDROXYSTEARATE
CALCIUM RICINOLEATE
COPPER OLEATE

are examples of a wide variety of these soaps available from Witco.

The excellent electrical properties (low soluble salts) and freedom from dusting (coarse particle size) are representative of the advantages you can obtain with these high purity Witco products. To insure their quality, uniformity and effectiveness they are produced under exacting chemical control.

As examples of the versatility of these typical Witco products may be mentioned the following suggested applications:

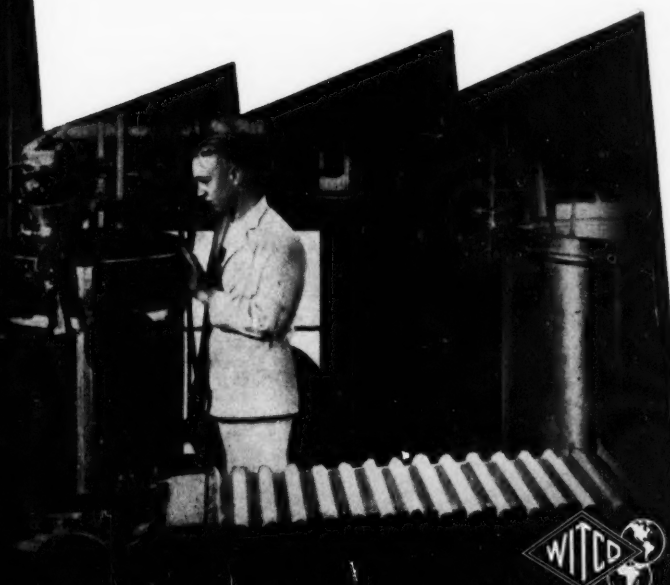
Lead soaps: **vinyl stabilizer, lubricants, waterproofing, rust preventives.**

Lithium soaps: **specialty synthetic greases, wax modification.**

Calcium soaps: **paint formulations, waterproofing, paper filler, non-toxic vinyl stabilizer.**

Copper soaps: **fungicide and insecticide, rot-proofing of fabrics, ore flotation, catalyst.**

A letter or telephone call to the Witco office nearest you will bring you further information on the particular soap in which you are interested.



WITCO CHEMICAL COMPANY • 295 MADISON AVE., NEW YORK 17, N.Y.

Los Angeles • Boston • Chicago • Houston • Cleveland • Akron • San Francisco • London and Manchester, England